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Original Contributions.

MEDICATED HOT-AIR BLAST.

By W. H. Simmons, D.D.S., Decorah, Iowa. Read Before the Northern Iowa Dental Society, at Spirit Lake, August 11-18, 1896.

I shall present nothing new to you on this subject except a new way of applying this old remedy. It would be hard to find a dentist that does not make use of hot air, or better still, medicated hot air, in some shape or form. I believe that many of us do not fully appreciate its great value and give it but little thought on this account. There are many places where the hot-air blast can be used with the best of results, but I wish to call your attention to two in particular. First, the treating of putrid conditions in the oral cavity; and second, the obtunding of sensitive dentine.

We, as dentists, are battling every day with pulpless teeth, blind abscesses, putrescent pulps and diseased antrums. Our battle is not an easy one, for nature has never been a good friend to us poor dentists. She seems to prefer medical surgeons.

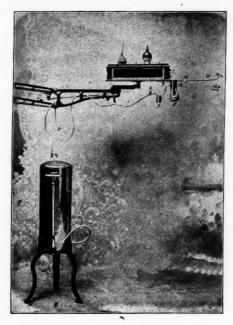
Some of the advantages in the use of the hot-air syringe are that you have two curative agents at work at the same time, viz., the antiseptic vapor and the hot air. The antiseptic fumes from an essential oil (oil of cassia for example), in connection with the alcohol and tannin, do not make the surroundings for Mr. Microbe as pleasant as they might be. This treatment alone I do not think sufficient to kill the germs, but it puts the diseased parts in such a condition that much less work is required to bring a case into subjection. While I have great faith in the medicated hot-air treatment, I would not depend entirely upon it as a sterilizer and antiseptic, but follow it up with one of the well-known remedies. I use it only as a preparatory treatment.

For example, I am to treat a tooth with a putrescent pulp and perhaps a blind abscess; in short, my treatment would be: First, the rubber dam; second, remove the decayed parts and get free access to the pulp-chamber; third, coax out as much moisture and putrid matter as possible without running an instrument farther than the lower portion of the pulp-chamber, never into the root-canal at the first sitting; fourth, apply the medicated hot-air blast with a strong current of air, plenty of medicine and plenty of heat; fifth, place in the cavity a good antiseptic, seal hermetically and leave from two to five days. You will say when the case returns for its next treatment that plenty of medicated hot air is good for a sick tooth. If pus and moisture still remain, repeat the treatment, and you can go at it with more freedom and run the absorbent cotton to the apex of the root without danger. There is nothing in dentistry that requires more judgment and good sense than these very cases. An abscess with a fistulous opening is not to be compared with it. Give these cases plenty of hot air and you will not hear the remark, so often made by our patients, that the tooth we have treated for them is sore and tender and they cannot use it. I have had cases where the lower third of the root-canal was filled with moisture and very sensitive; such cases are not rare, and by a few minutes' use of the alcohol and oil of cassia vapor from the hot-air syringe I have been able to run cotton to the apex without pain. came out perfectly dry and I filled the root at once. The quicker we can get a pulpless tooth or a blind abscess in a healthy condition the better will be the result. This is one reason why I like this treatment.

In the treatment of diseased antrums I have not had practical experience with the hot-air blast, so have but little to say on this subject. Dr. Brophy, of Chicago, whom we all know by reputation at least, considers it a fine treatment. Why should it not work to good advantage? The antrum is a difficult place to medicate, and an antiseptic vapor would have the advantage of most medicines used, in that all parts of the cavity would be medicated alike. Were I to use it in a case of this kind, I should use it only in connection with some other treatment. I believe where two curative agents can be used in these putrid cases without conflicting with each other, that a cure can be effected much quicker than by confining ourselves exclusively to one. I have been able to control hemorrhage with this blast after

removing the pulp, where some of the most powerful styptics have failed to do the work. So much for hot air in diseased conditions.

Obtunding Sensitive Dentine.—Before I proceed farther let me describe to you a hot-air syringe I have invented, and upon which I base all my arguments, and especially that of obtunding with hot air. I have used this form of syringe in my practice for two years.



You will notice by the cut that the syringe is attached to the bottom of the tray, that the air supply comes from a compressed air cylinder, marked No. 3, and that the air in passing to the end of escape passes through No. 7, which is the receptacle for medicine; the medicine is here volatilized; it is then heated as it passes through No. 13, and is then conducted to the parts to be treated by No. 10; this you will notice will give a steady blast.

In obtunding sensitive dentine with a medicated hot-air blast these things are to be remembered, that you must have an even heat and an even current of air, so arranged that it will work all the while you are operating and leave both hands free for the operation. It must be so constructed that the blast and heat can be easily controlled. These points I worked over a year to obtain, and the syringe represented in the cut is the result.

Some of the reasons why the medicated hot-air blast obtunds sensitive dentine are these: First, a blast of air, either hot or cold, has an obtunding effect; second, many of the medicines used are obtundents to some extent-menthol, essential oils, tannin and alcohol are some of the medicines used; last, but not least, comes the obtunding effect of hot air, which has been considered a valuable obtundent by those who stand high in authority. Heat affects the sensibility of dentine in two ways-by its obtunding effect, and by extracting from the dental tubuli the moisture they contain. Some writers claim that the dentine contains nerve fibers, but the majority of those best qualified to know say this cannot be proven. There is one thing we do know, and that is that it contains moisture, and that this moisture is the medium which transmits feeling to the nerve proper when the exposed portion is irritated, as with a bur or excavator. I take a pair of nippers and cut a covered electric wire; the ends of the wire are not over one-hundredth of an inch apart, but the connection is broken and the message ends when it reaches this space, though the covering may still remain perfect. Is not the action in the dental tubuli similar to the experiment with the wire? If by the use of volatile medicines and hot air, or if by any other means, we have removed the moisture from the tubes, we have made an air space which breaks the connection between the irritated part where the bur or excavator is at work and the living pulp within the tooth. Whether this be so or not, I like to think that the dental tubuli, so far as the moisture is removed, are filled with a resinous gum from the medicines used. A piece of glass held before the syringe will show the rapid evaporation of the volatile medicines and a resinous deposit will be left on the glass. I can see where, if these tubes are filled as far as they are made dry with this gum, that it would be an advantage in cleansing a pulpless tooth as well as assisting in obtunding sensitive dentine. I notice that teeth which have a hard, firm dentine are as a rule more sensitive than the soft, chalky ones, and that they are much more difficult to obtund. It would stand to reason that in the firm dentine the dental tubuli are smaller, which leaves the

walls thicker, thus giving a more solid substance to remove the moisture from. This is probably one of the reasons why these cases are more difficult to bring into subjection. The "porous tooth," if I may use the expression, can be more thoroughly obtunded by removing the moisture than those having firm dentine.

The question that interests us most is not so much the theory of relieving pain, but a practical application of some method that will produce the required result. For two years at least three-fourths of the cavities I have prepared for filling have been prepared while the medicated hot-air blast was directed into the cavity. I have watched its action closely and know I can safely say that the pain is reduced in any case at least one-third. I have in many instances commenced to prepare a cavity without the blast, found it sensitive, applied the blast and then cut the cavity absolutely without pain and worked upon the tooth as freely as though it were a dry bone. Cases of this kind of course are exceptions. I have used it upon patients who were perfectly ignorant of its use and had them say when the cavity was prepared: "That gives relief, doesn't it?"

Here is a case to which I wish to call your attention. The operation was to expose the pulp in a sound but dwarfed lateral, as I wished to correct an irregularity and use the root to support a bridge. The patient was a very timid lady with rather sensitive teeth. I directed the hot-air blast on the tooth at the gum line, not exceeding one minute; slight pain when the bur passed from the enamel to the dentine; drilled through the dentine and into the pulp as much as an eighth of an inch; the patient did not flinch and said there was not a particle of pain. This has been the only case where I have had the opportunity of testing its use for exposing a pulp in a sound tooth. It may be that in a larger tooth it would not give the same results. I do not and never have claimed this to be a painless method, but that it reduces the sensibility I have proven to my satisfaction in my practice, and to the satisfaction of others who have seen it used at clinics.

If you ever try the hot-air blast in your practice remember this, that you cannot learn to use it in a day or a week so as to get the greatest results from its use. The obtunding of sensitive teeth is such a delicate matter that whatever method is used must be applied with knowledge and experience. If we are to give relief to our patients we must make it a study, so as to know what to do and

what not to do. If you were to direct a steady blast of warm air into a cavity and every few minutes give it a sudden blast of cold air from a chip-blower, or use a syringe full of ice-water, you would probably decide that a hot-air blast gave more pain than relief. Use a steady blast of medicated hot air, sharp instruments, and still sharper judgment, and your patients will tell you that you fill their teeth with less pain than any other dentist they have ever had work for them, unless they have had cocain drawn through their teeth by electricity.

THE FIRST PERMANENT MOLAR.

By J. T. Martin, D.D.S., Muscatine, Iowa. Read Before the Northern Iowa Dental Society, at Spirit Lake, August 11-13, 1896.

There seems to be an almost universal agreement that this tooth is the seat of caries, and consequently is in need of our services more frequently than any other tooth of the permanent set. This fact would seem to warrant its frequent consideration and is the excuse for the present paper. Originating in a manner identical with, and at a time only a little later than, the deciduous teeth, it is subject to many of the conditions which result in the formation of these very temporary structures. Each of the other teeth of the permanent set has its origin in a budding out from the neck of the enamel organ of some other tooth, but this tooth is developed, according to Tomes, "by a similar budding out of epithelium from that same primary epithelial lamina whence the temporary teeth originate."

This similarity of origin links this tooth with the temporary teeth. In commenting on this tooth Dr. Wortman says: "There is one thing upon which I would strongly insist, and that is that the first true molar in the human dentition is a persistent milk molar." The first manifestation of a process which is to result in the formation of a tooth is observed about the seventh or eighth week of feetal life, when the enamel organs for the temporary teeth begin to develop, and by the fifteenth to seventeenth week the enamel organs for first permanent molars are similarly developed.

The dentine cap for this tooth appears, in other words calcification begins, at about the sixth month of feetal life, and at birth the cap is about .039 to .078 of an inch in height. The calcification of crowns of temporary incisors is complete at this period, and the crowns of

other temporary teeth nearly so, the roots being gradually completed after birth as the teeth are erupted. These teeth then—the temporary—are in a stage of development much better adapted to withstand the changes, and the frequently interrupted, imperfect nutrition, incident upon birth, than are the first permanent molars, which, as we have seen, are at this period just in the midst of active calcification of their crowns.

Considering the frail structure of the temporary teeth, is it strange that these teeth, developed under such similar although in some respects less favorable conditions, are so frequently of poor structure?

With good health of parent and child, plenty of proper food, hygienic surroundings and suitable exercise, there is no doubt of nature's ability to produce first permanent molars of stamina equal to any of the other teeth. However, when we consider the critical period during which its active formation is carried on, how frequently from carelessness or ignorant neglect these conditions more or less completely fail of fulfillment, ought it to be a matter of surprise that so large a proportion of these teeth are of what we term poor structure?

What the real nature of this deficiency is remains more or less a mystery. It has been generally accepted to be the deposition of an insufficient quantity of lime salts and is characterized as imperfect calcification. More recent experiments, however, seem to indicate that this is not the true explanation; that it is not necessarily so much a deficiency in amount of inorganic material as a failure to properly build together the materials as furnished. Very vastly differing results follow manipulating a given material in different ways. It seems probable that the character of the tooth-germ and the manner in which it uses the materials furnished, and the resulting nature of the organic matrix may offer a possible solution of the question.

Tomes, in his work on dental anatomy, says: "The insoluble salts of lime are altered in their behavior by association with organic compounds; if a solution of a soluble salt of lime be slowly mixed with another solution capable of precipitating the lime, the resultant lime salt will go down as an amorphous powder, or under some circumstances in minute crystal, but in the presence of gelatin albumin and many other organic compounds the form and physical character of the lime salts are materially altered." And again, "Teeth owe

their hardness to an impregnation with salts of lime; the organic matrix may be of albuminoid character, in which case the tooth is of horny consistence and is spoken of as "cornified," or the matrix may be like that of bone, gelatinous, in which case the tooth is more richly impregnated with salts and is spoken of as "calcified." However, be the real explanation of the difficulty what it may, its frequent occurrence is very largely the result of ignorance, not only of the process of dentition, but even of the commonest rules of health, and the only hope of general improvement in the condition of this tooth lies in raising the standard of information on these subjects. Even a very imperfect rudimentary knowledge of the periods of greatest danger from interrupted nutrition and the essential elements of food would result in great benefit.

Until there is a more perfect general understanding of the subject we must meet the individual cases as they present and treat them according to the conditions found, being careful that the instructions given at these times may be instrumental in hastening the day of general understanding.

There is great difference of opinion as to the methods of dealing with the first permanent molar, from those who advise its universal extraction, almost regardless of conditions, to those who advise its almost equally universal retention, likewise regardless of conditions. Personally I regard the loss of this tooth as a misfortune usually, just as the necessity for a filling is a calamity. It would be desirable to avoid the necessity for either, but I regard its loss as much less of a calamity if it occurs at an age which permits the second molar to move forward bodily and occupy the space.

Many cases are presented to our notice before—say the twelfth year, when all reasonable indications are that the tooth cannot be retained for more than a few years. When the bicuspids are not in position I would usually advise the temporary filling of tooth to relieve pain and insure its use, with the understanding that upon the appearance in place of the bicuspids the molar be extracted.

In all cases, except a possible few where the extraction of the first molar for regulating purposes may be indicated, it seems to me best to save these teeth when there is a prospect of their remaining for a a number of years with reasonable effort, but if they are to be lost before the twentieth to twenty-fifth year their removal as soon after the bicuspids are in place as possible will result in the best

masticating surface for the longest time obtainable under the circumstances.

If the second molars on lower jaw are in place before this tooth is, extracted the probability is that the space will remain or the second molars will tip forward, making a very faulty and undesirable articulation.

The upper molars act quite differently, and I have frequently seen cases where the first molar was extracted between the ages of twelve and sixteen and the spaces entirely closed. It is impossible to state definite ages when it is wise to extract this tooth, but it is safe to say that the best results are likely to follow its removal after bicuspids are in place and before the second molar appears. If it is not deemed advisable to remove the tooth, use all reasonable means to retain it in place with full restoration of crown until adult life; it is better to have a space between bicuspids and molars, corresponding in width to first molar, than the evil effects of an articulating surface such as will probably follow the tipping forward of the second molars. The practice of filling the roots, and either removing or allowing process of decay to remove the crowns, has been more or less advised. Let me urge that one of two courses be pursuedeither extract at once or preserve the whole tooth in as nearly its original form as possible.

Another consideration is the improved condition and usefulness of the wisdom tooth, so frequently observed in those cases where the second molar occupies the place of the first molar.

Many objections are urged against the removal of the first molar, but chief among them seems to be that its early removal results in a failure of jaw to properly develop, and that there is a possibility of transmitting to succeeding generations the thus shortened jaw, causing irregularity of the teeth.

The weight of testimony seems to me to point to the fact that the jawbone proper is developed independently of the teeth. One quotation from Talbot will suffice to state the point, and while he draws entirely different conclusions from his observations they hardly seem justified. He says: "In my investigation during the past fifteen years for the cause of irregularity of the teeth I have become convinced that the jawbone proper and the alveolar process are two separate and distinct structures. The manner of their development and their function are independent of each other."

And again: "The alveolar process is made up of soft, spongy tissue, for its development, shape and size depend entirely upon the teeth and not upon the jaw."

In studying the eruption of teeth it is learned that the alveolar process is built up around the teeth, increasing by deposits upon its edge next to crowns of teeth as the teeth advance. From these statements I believe we are justified in concluding that the presence or absence of a tooth or teeth does not affect the development of the jawbone, and that the presence or absence of teeth does affect the physical character and amount of alveolar process. The process is largely responsible for facial expression and a change in its form may, in fact does, correspondingly affect the form and shape of face. Also, that following the removal of tooth or teeth there must be a change of features dependent upon the amount of change that takes place in the process. But the very fact of the dependence of process upon presence of teeth is evidence that if in a succeeding generation the teeth are present the process will be developed to accommodate them.

Other objections are urged, but they serve to prove not so much that these teeth should not be extracted, but that when they are removed it should be under the conditions I have mentioned.

USE AND ABUSE OF BRIDGE-WORK.

By Wm. H. Steele, D.D.S., Forest City, Iowa. Read Before the Northern Iowa Dental Society, at Spirit Lare, August 11-18, 1806.

Mr. President and Gentlemen:—I will not attempt to write an elaborate paper on this subject, but will touch simply on a few practical points here and there, in order to bring the subject before you for discussion.

Dr. Barrett expresses my idea in his article on bridge-work in the "American System of Dentistry," where he says: "A few teeth is the limit to which bridging can be satisfactorily carried." I think it would have been much better if Dr. Barrett had been more explicit and stated just how many teeth a bridge, or section of a bridge, could be expected to safely carry under favorable conditions, according to his experience and judgment. If he had done so it might have been the means of saving many a young bridge-worker from humiliating failures.

The force which the teeth have to resist when doing only their natural amount of work is the force capable of being exerted by the muscles of the lower jaw, in its different movements during the process of mastication. This force has never been accurately measured, and there is no probability that it will ever be satisfactorily, as there are too many conditions involved. This force, of course, is greatest when the jaw is acting in its natural positions. Dr. Hans Block, of Germany, gives the minimum force at 300 pounds, the maximum at 500 pounds. The late Dr. J. J. R. Patrick gave it at 65 to 85 pounds. There is a wide field for guessing between these two estimates, but, for the purpose of illustration, we will take 210 pounds as the average. This divided by 14 gives 15 pounds as the pressure each tooth would have to sustain, providing the teeth are all perfect, and that they articulate so that each tooth sustains its full and equal share of the work, which is very seldom the case. Now let a bridge be placed in the mouth carrying the fourteen upper teeth, using the two cuspids and the right and left second molars as piers; what is the result? We are forcing these four teeth to do the work of fourteen and sustain the whole force of the lower jaw in every movement of mastication, equal to a pressure of 521/2 pounds on each tooth.

Again, take a bridge on one side of the mouth, carrying the two bicuspids and first molar, anchored to the second molar with a full cap, and to the cuspid with an open-face cap. In this case two teeth apparently have to do the work of five, but really do the work of ten, as most people who have a bridge of this kind use but one side of the mouth in mastication.

In case of the first bridge mentioned, biting on the section between the cuspid and molar has a tendency to motion, the cuspid acting as a fulcrum; in fact, any bridge with a central pier is liable to pivot on that pier, as it is almost impossible to set a bridge so that both terminal piers shall be equally rigid. The second bridge is open to the same objections; the whole force of the jaws often thrown on the middle of the bridge, causing the open-face cap to give, this being the weakest point, and throwing the whole strain on the posterior terminal anchorage.

It is an impossibility to place a bridge of any kind in the mouth without forcing the teeth to which it is anchored to do a large amount of unnatural work, and the ratio increases with every tooth

added to the bridge; and as a natural consequence the permanence and usefulness of the bridge decreases in the same ratio.

It is an undisputed fact, that to continually overwork and abuse any organ of the body is a transgression of nature's laws that will not be tolerated, the penalty for which is disease, and it must be borne in mind that the teeth are no exception to this rule. The unnatural strain, pressure, overwork and motion they are subjected to when used as piers for a bridge causes inflammation, absorption, and ultimate loss of the teeth.

On the immovability of a bridge depends to a great extent its usefulness, healthfulness and permanence, and it is unreasonable to expect the roots of two teeth to rigidly anchor a bridge carrying five or six teeth. If it is not immovable it will not be impermeable, and if it is not the latter it will soon become practically useless, unhygienic and dangerous. The indiscriminate use, or I might say abuse, of bridge-work is working a great deal of harm and is creating a strong prejudice against it in the minds of the people, which would not be the case if it were confined to its legitimate field.

Dr. Haskell defines the legitimate use of bridge-work: 1st. In supplying the loss of the lower bicuspids and molars where there is a posterior molar remaining. 2d. On the upper jaw bridges of not too many teeth are useful in the case of loss of posterior teeth, if there are firm anchorages.

In the loss of anterior teeth the bridge piers are subjected to a lateral strain in biting hard substances that often makes them a failure. Great judgment must be used in constructing such dentures that there be no occlusion of the lower teeth.

Among the most objectionable features of bridge-work are the necessity of mutilating good healthy teeth to adjust bands, etc.; the unsightly appearance and impracticability of bands and open-face caps on the anterior teeth; the expense and difficulty of repairing; the tendency to drag out and destroy the teeth to which the piece is anchored; and last but not least, the unhygienic and disease-breeding feature.

I have removed many bridges where the bridge, piers and all, could be removed with the fingers of one hand; and, indeed, one hand is all anyone would care to use for the operation, as the other would be needed to shut off the olfactory organs.

ALVEOLAR ABSCESS.

By H. W. Kiser, D.D.S., Lansing, Iowa. Read Before the Northern Iowa Dental Society, at Spirit Lake, August 11-13, 1896.

An abscess is a pus cavity within the tissues, wherever it may be located. The term alveolar abscess applies to an abscess brought on by inflammation at the apical space by some tooth with a dead pulp. It is a disturbance that has robbed many a patient of a night's sleep and in return given a night of misery and pain. We as dentists cannot be too well acquainted with the various forms, and nature of this trouble.

The first thing noticeable in this disease is a slight soreness of the affected tooth or root, and it has a tendency to become somewhat loosened. As the inflammation continues the membranes lining the walls of the root and socket become congested with blood. The fibers become thickened, slightly raising the tooth from the socket. The patient will complain of the tooth being longer than the rest, and that the least concussion will cause pain, which in many instances becomes intolerable. The gums over the affected root usually become congested and inflamed. The patient frequently complains of fever.

If this condition continues for any length of time the tissues will finally break down and pus will form. During this process there is great pressure at the apical space and the result is absorption of the surrounding tissues. The pus once formed will always burrow its way in the direction of least resistance.

The external lamina of bone being harder than that at the apical space frequently causes considerable destruction of bone before the pus finds an outlet.

There are various forms of alveolar abscess. In the acute form we frequently notice that the pus finds its way out through the soft tissues very readily, and thus the destruction of bone is not so great and is slower in its progress. Another form is where the pus has burrowed its way through the bone, separating the periosteum from the bone, and thus forming a pus cavity for itself. A great deal of swelling usually accompanies this variety. Where the periosteum has been stripped from the bone and is left in that condition any length of time, there is danger of necrosis of portions of bone. It should receive prompt attention in order to avoid it. The third form I will mention is where the pus follows the peridental mem-

brane along the side of the root and is discharged at the margin of the gums.

An alveolar abscess of the acute variety, when left to itself, is apt to become chronic. So long as there is a dead pulp constantly discharging septic matter into the apical space the abscess will not heal. In case of necrosis an abscess is liable to assume the chronic state. It is usually detected by a fistulous opening leading to the affected tooth and discharging more or less pus. In regard to this fistulous opening we meet with a variety of places for its location. As a rule the orifice of the duct will be found over the buccal surface of the root of the affected tooth. I have met with cases where the opening had formed upon the cheek, others upon the chin, but such cases are somewhat rare. The chronic form of abscess will sometimes be present for years, causing very little discomfort, except that there is a constant discharge of pus, which makes it somewhat unpleasant for the patient.

There is one form known as the blind abscess, in which there remains a mass of tissues in the enlarged apical space with which more or less pus is intermingled. This condition may continue for some length of time with but very little change, the pus burrowing through the tissues without the patient's knowledge. A tooth in this condition is liable to become sore and attract the attention of the patient from time to time. The pulp-chamber being in a putrescent state constantly discharges a sufficient quantity of septic matter into the apical tissues to prevent healing.

Treatment.—In giving my course of treatment I will be brief as possible. The treatment in a majority of cases presents but little difficulty. We have all classes of patients to deal with. Many of them will walk the floor night after night, suffering severe pain, until the face becomes badly swollen and the tooth is in such a sore condition that it will hardly bear touching. Then they go to a dentist to obtain relief.

When the tooth or root is a worthless one extracting is all that is necessary, but when the tooth or root can be utilized in any way and the patient so desires, we must pursue another course. When the tooth is in a very sore condition I open, if possible, into the pulp-chamber so the pus can be discharged through the tooth. Where the opening at the apex of root is closed I open with some suitable broach. In cases where the pus has burrowed its way through the

bone I discharge it at once by the use of a bistoury, after which I dismiss the patient for a few days, or until the soreness has somewhat abated.

When the tooth is in a condition ready for treatment the first step is to remove the cause of disturbance, which is the septic contents of pulp-chamber and root-canals. In using a barbed broach we cannot be too careful, especially when we rotate it in the canal, as it is liable to break and a portion of it be left in the canal, which at times is very difficult to remove. For ordinary treatment I very seldom use any sort of drill to enlarge the canal. In my experience I have found there is too much danger of breaking off the point of the drill when any distance up in the canal, which many times seems almost impossible to remove, and in cases where the root is very crooked or has the shape of a bayonet, one is apt to drill through the side of it. I flood the canal with peroxid of hydrogen or pyrozone as soon as I have the contents removed, then pack with cotton saturated with some good disinfectant and seal the cavity for several days. Repeat this until it is in a healthy condition, after which I fill the root.

In the chronic form of abscess the treatment will differ somewhat. There is generally no soreness and little inflammation to contend with. We find some respond very readily to our treatment, while others are very slow in making any change. In a blind abscess usually all that is necessary is to open into the pulp-chamber, so that free access can be had to the canals, remove what is left of the dead pulp, flood well with peroxid of hydrogen or pyrozone, pack with cotton saturated with some disinfectant, seal for a week or ten days, and repeat if necessary until there is no more weeping at the apex.

In an abscess with a fistulous opening an entrance should be gained, if possible, to the abscess at the apex of root, so that medicine can be forced through the opening into the abscess. By placing some temporary stopping in the cavity and inserting the needle of a syringe, medicine can be forced into the abscess, so that it will make its appearance at the fistulous opening. The remedy I generally use for this purpose is creasote, with a few iodin crystals dissolved in it. There is one objection in its use, for if not properly handled it is liable to discolor the tooth. Where we cannot gain an entrance to the abscess at the apical opening, medicine can be injected with

some suitable syringe through the fistulous opening with fair results. As soon as we have succeeded in bringing on a healthy condition the root can be filled and nature will take care of the rest.

When we meet with cases that will not yield to this treatment we are apt to find the membrane at the apex of root destroyed. The point of root may be partially absorbed and in a roughened condition, or there may be a deposit of calculus. In such instances it will be necessary to gain an entrance to the apex, smooth the root or remove the calculus, as the case may be, in order to arrive at a cure. Where necrosis is present it cannot be cured until the dead bone has been removed.

I feel sure that I have not presented anything new in this paper before this society, but I trust it may bring forth a discussion from which we may all learn something and be thereby benefited.

ALLOY FILLINGS: A SUGGESTION TO EXPERIMENTERS.

BY WILLIAM H. TRUEMAN, D.D.S., PHILADELPHIA, PA.

Many references to the manipulation or the behavior of amalgamated alloys, and of fillings made therefrom, that would otherwise be instructive, are confusing, from the fact that the writers neglect to state the composition or character of the alloy they have in mind. One states, for instance, that a lock of cotton, or a pellet of bibulous paper, makes by far the best tool to thoroughly impact the amalgamated alloy in place, and claims that to secure a good filling the mass must be soft and plastic enough to permit its use in this way. Another uses it dry, that is, as free from surplus mercury as it can be worked, and directs that it be packed in place with mallet force; while another ignores both methods, declaring them alike faulty, finding nothing so satisfactory for this purpose as a properly manipulated burnisher.

While making due allowance for "personal equation," in accounting for this diversity of opinion among practical operators of acknowledged ability, such expressions without further explanation can hardly be considered instructive. The explanation, unfortunately, is seldom given. If the first should clearly state that his favorite alloy contained a preponderance of silver, and the champions of the mallet and burnisher should inform us that theirs was more largely composed of tin, the mystery might be solved.

Having for many years made all the alloy I have used, and having experimented largely with differing formulæ, I have been much impressed with the importance of varying the manipulation of each differing composition to get from it the best possible result. I have also been impressed that the importance of this is not so generally recognized as it should be, and that there is here a wide field promising good results for those able and willing to do a little hard work for the general good, in solving the relation of manipulation to the composition of amalgamated dental alloys.

In the meantime, as a help in this matter, I would suggest that each operator should become familiar with the composition of the alloy he uses, not necessarily its exact formula, although this is desirable; but he should know at least whether it is a silver-tin or a tin-silver alloy; should also know, closely, the relative proportion these two principal metals bear to each other, and should always specify that when speaking of its manipulation or behavior in the mouth. The other metals, while modifying the character of the alloy to a far greater extent than the proportion they bear to the mass, are quite subservient to its principal and essential components.

I have used alloys that were at their best and made the best fillings when used several hours after amalgamation, and others that became absolutely unworkable ten minutes after mixing. Some that required to be used very plastic, and others that were worthless unless the surplus mercury was expelled by squeezing between the jaws of a bench vise. Any attempt to use these differing alloys by a common method would result in a large percentage of failures; but used, each in a way that suited it best, they have produced in the long run equally good results, so far as tooth preservation is concerned.

When you tell us *how* you mix and use your amalgam, or speak of its virtues or its vices, kindly let us know what alloy you are using. Your experience will then be of value and suggestive to an inquiring mind.

WALRUS' WHISKERS FOR TOOTHPICKS.—A new industry has been started in Alaska—the preparation and sale of walrus' whiskers for toothpicks. When a walrus is killed the natives pull out each separate hair. They are thoroughly dried, arranged in neat packages and exported to China, where they are much sought after by the upper classes.—Invention.

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ETHER AND OXYGEN AS ANESTHETICS. By John L. Corish, M.D., Brooklyn. After citing some cases in which he has combined ether and oxygen, he speaks of oxygen as an anesthetic. An extended series of experiments in the employment of ether, chloroform, nitrous oxid and oxygen leads me to the following conclusions: (a) The excitement stage due to the cutting off of the oxygen from the circulation, thereby causing nervous reflex muscular movements and irritation of the air passages, is abolished when the oxygen is added, on account of the blood receiving sufficient oxygen. (b) The cyanosis which is caused by the reflex paralysis of the vasomotors, thereby allowing dilatation of the venous and contraction of the arterial blood-vessels, due to a lack of oxygen at the nerve centers, is little marked or entirely absent. (c) That there is no increase of the mucous secretion is due to the removal of the cause of irritation and congestion of the mucous membranes. This nuisance, which in many instances is intolerable, particularly in the surgery of the nose and mouth, has in some cases in which the secretion entered the larynx caused dangerous symptoms of asphyxiation or subsequent pneumonia. (d) The vomiting and nausea, owing to the congestion of the stomach and irritation of the palate, are alleviated, and this of necessity does away with the danger of food becoming lodged in the air passages. (e) The anesthesia may be continued without stertor. This symptom, due to muscular paralysis of the palate, is not a necessary accompaniment of anesthesia. It shows that excess of the anesthetic is being used. The palate is controlled by both voluntary and involuntary "forces." This symptom is a very good guide for the operator to go by. (f) The recovery from anesthesia is quicker and more complete, owing to a minimum of ether being used. The recovery cannot be hastened by the employment of oxygen separately after the operation. (g) The amount of ether used is just sufficient to keep the patient under its effects, and when thoroughly mixed with the oxygen (compound) no serious symptoms can result. The patient will not breathe at all if oxygen be given to the point of

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saturation, and therefore no more ether will be taken in than is required until the respiratory center calls for more oxygen. (h) Owing to the amount of oxygen stored up in the system by this method the etherization may be discontinued at times for from fifteen to thirty minutes, and complete anesthesia may be readily and quickly reinduced in thirty seconds, if occasion requires, by application of the previous method. This advantage to the specialist in pharyngeal operations must be apparent. (i) Owing to the character of the heart-beat not being much altered, the combined anesthetic can be given with comparatively less danger in cases of stenosis and insufficiency of the cardiac valves.

Finally, I wish to state that I believe, and think it will be borne out by subsequent experiments, that when the oxygen is given in superaoundance in connection with ether, a double effect will be produced, that is, an anesthesia from ether primarily and from oxygen secondarily. Ether is eliminated from the system by means of the lungs through respiratory efforts. If we can supply sufficient oxygen to the system, so that the respiratory center is not irritated or rendered dormant, we prolong our anesthesia until such time as the ether is split up chemically and passed off through the skin. Another point to be observed in the use of oxygen with ether is this—in extensive operations, in which great loss of blood is to be expected, and it is usual to constrict the limbs, it would be advisable to administer oxygen before the tourniquet is applied, so that when the blood is allowed to re-enter the circulation it will be in a condition more in conformity with that of the rest of the body.

With regard to the anesthetic power of oxygen when properly induced, in its application to surgery, I am positive that it will be of very great value in operations on young children who may require surgical interference of short duration. Operations about the mouth and nose could be performed to the entire satisfaction of the operator, as the apparatus could be dispensed with immediately on the cessation of respiration. Under the condition of oxygen anesthesia, so to speak, the system is saturated with oxygen, the blood in the veins assumes an arterial hue, and the surgeon would have difficulty in recognizing venous from arterial hemorrhage, but this would be insignificant in comparison to the benefits obtained.

It is to be hoped that further research into this very important subject will prove that as we perfect our apparatus we will approach the point where we will use the minimum amount of ether and the maximum amount of oxygen.—Medical Record, September, 1896.

LOSS OF TWO TEETH BY A RUBBER RING. By Dr. Fleury, of Rennes. Translated from Revue Mensuelle de Stomatologie by William Rushton, L.D.S. Eng. Miss X—, aged 15 years, strong, well built, and without any hereditary taint, came to Paris in the following condition: Her two central incisors in the upper jaw were moved outward at an angle of forty-five degrees. The teeth were loose, painful and half out of their sockets, the necks being four to five millimetres outside the gum. The upper lip had for a long time ceased to cover them, so that they were permanently exposed to the air. Around and above the teeth the gum was fungous, unhealthy and bled readily. The rest of the buccal mucous membrane was healthy, except a slight gingivitis due to tartar. The vault of the palate presented no malformation.

The lateral incisors were sound, but separated from the centrals by a space large enough on each side to admit of another tooth of the same size as the laterals. In short, there was quite a *diastema* on each side, only, instead of occurring between the canines and bicuspids, its situation was between the centrals and laterals. In the lower jaw all the teeth occupied their normal positions, and the molars articulated perfectly with their corresponding teeth in the upper jaw, but the lower incisors did not impinge on the upper ones, these latter being so far out of their normal position.

The mother, who consulted me to know if anything could be done to preserve the teeth and make them regular, gave the following details: Three years before she had taken her daughter, then 12 years old, to a dental institute of some notoriety in Paris, the object being to have the teeth regulated. At that time the four upper incisors were contiguous, and to make space the two upper six-year molars were extracted. From the time of this operation up to the end of September, 1895, four regulation plates were worn. I have seen the last but one. It is a platinum and vulcanite plate carrying in front two hooks to which were fixed rubber rings passing round the necks of the teeth. The mother said the three other plates were similar in manufacture and for the same purpose. On December 25, 1895, the teeth, which had always been painful, became still more so. In addition they became longer by being forced out of

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their sockets; the irregularity was much worse than it was before any treatment was begun. The girl refused to go to the institute any longer and the parents did not insist upon it. Nothing was done until March, when I was consulted.

After obtaining all particulars, and after a close examination, in conjunction with another dentist, we proposed to extract the two teeth in such a hopeless state and to supply the patient with four artificial substitutes. The operation was performed, the teeth being so loose that they could have been extracted without the aid of forceps. Our surprise was great when, as we were proceeding to syringe the alveolar cavities, we perceived in the right the end of an india-rubber ring. With the aid of a pair of tweezers and a little gentle traction we recovered it entire.

The inflammatory phenomena, periostitis, and the elongation of the teeth were thus explained. The india-rubber ring was the cause of all the evil. It had slipped off the hook to which it had been fixed, and encircling the right incisor had worked little by little up to the apex of the root. The inflammation had spread to the left incisor and had also involved it. The rest of our treatment was simple. The fungous patches on the gum were cauterized and three weeks after were quite healthy. A temporary plate carrying four teeth was supplied. The girl therefore has six superior incisors, but the lips meet again now, and to the ordinary observer the aspect of the teeth would not attract attention.—British Journal Dental Science, September, 1896.

HOW TO MAKE A SMALL FURNACE FOR BAKING PORCELAIN. By Wm. Rushton, L.D.S. Eng. First obtain from a woodturner a hollow cylinder of wood 4½ inches long, inside diameter 3 inches, sides 3-16 inch thick, open at top, but having a bottom half-an-inch thick. Let this pattern be cast in iron, and let a round hole be drilled in the side, the center being 3¼ inches from the bottom, and another hole be drilled through the middle of the bottom. The hole in the side should be 1 inch in diameter, and is for the mouth of the muffle; the hole through the bottom is to admit the nozzle of a Fletcher's injector blowpipe. Let the nozzle of the blowpipe be tapped for about ¾-inch down and let the bottom hole of the furnace be threaded so as to allow the blowpipe to be screwed into it. Let the leg of the blowpipe nearest the nozzle be filed off. Next obtain

one of Morgan's plumbago crucibles, 3 inches high and 21/2-inch diameter. With the sharp end of a riveting hammer chip a hole in the bottom of the crucible and with a file enlarge the hole to the diameter of the blowpipe. Next obtain a piece of platinum foil 31/2 by 3 inches, and of the thickness usually employed to cover roots in pivoting. Bend it in this fashion with the ends interlocked and hammer the ends closely down to prevent gassing. We now have a platinum muffle 31/2 inches long with a flat bottom 7-8 inch wide. dome-shaped top and open at both ends. At one end make a few cuts with scissors into the dome-shaped part to allow of the end being closed by bending the platinum down at right angles. Now place the crucible in the furnace and file it down where the muffle goes. until by passing the muffle through the hole in the side of the furnace it rests on the crucible on a level with middle of the hole. Now sink the crucible in the bottom of the furnace with sand and plaster. taking care to keep the hole at the bottom free. Then mix some fresh sand and plaster, and plaster it round the ends of the muffle now placed in position, taking care to imbed the far end in the investment. Build the investment up somewhat dome-shaped. allowing 3/4-inch between the investment and the muffle on each side, and having about 11/4-inch aperture above. Let the part of the muffle that projects from the hole in the side be turned down flush. Make a tray with another small piece of platinum foil. A door for the muffle can be made with a little sand and plaster or fire-clay. This furnace is large enough for four teeth or a small bridge. With a hole drilled in the bench for the blowpipe to pass through, the furnace can be put together at will and kept out of the way when not wanted. The blowpipe can be used for melting gold or other purposes of the workshop. A second plumbago crucible with a halfinch hole knocked in the bottom and used as a funnel after the furnace is lighted, is an improvement. I am told that asbestos and plaster are better than sand and plaster, and also that fire-clay four parts by bulk to one of sawdust, and made into a paste with silicate of soda (liquid silex), is better still. The total cost, exclusive of the foot-blower, should be under \$10, the chief expense being the platinum.—British Journal Dental Science, September, 1896.

COCAIN A SPECIFIC FOR NAUSEA. Dr. C. W. Ingraham (Am. Med.-Surg. Bul.) discovered accidentally about a year ago that

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the application of a 2 per cent solution of cocain to the mucous membranes of the nostrils will almost instantly, in the majority of cases, relieve nausea, and his experience since that time shows it to be a very reliable remedy, if not a specific for this distressing and often serious symptom. The efficacy of this treatment is easily explained on a strictly physiological basis. That there is a distinct nervous association between the olfactory nerves and the nerves of the gastric mucous membranes is repeatedly demonstrated to the everyday observer. Repulsive odors inhaled are oftentimes reflected to the stomach, causing a sensation of nausea, which is usually relieved as soon as the exciting cause is removed. In naso-pharyngeal catarrh the secretions and accumulations cause much retching and frequently vomiting when the passages are "cleared out." a third instance of the close reflex association may be mentioned the observations of a certain surgeon, who claims that applications of cocain to the nasal membranes just previous to and during anesthesia will relieve the patient of many unpleasant accompanying and after-effects, particularly gastric disturbances. A fourth instance, though not always present, may be mentioned—the tendency to digestive disturbance during attacks of hay fever or hay asthma.

However we may attempt to explain this positive relief of nausea following local anesthesia of the nasal membranes, the clinical fact that it does prevent and relieve the condition is sufficient evidence for its employment. As in the use of cocain for the relief of other painful or annoying conditions, great care should be exercised to protect against the well-known danger of idiosyncrasy, as well as to protect against subjects acquiring the habit, particularly if its use were to be long continued. It would be advisable, where the use of the remedy is to be often repeated, for the physician to personally administer the applications a few times, to become assured of its results and to observe any idiosyncrasies, as well as to instruct the patient as to how much and how to use it. It would also be advisable for the physician not to inform the patient of the nature of the remedy, other than that it is a poison and must be used with great care. He believes the results that may be obtained from the use of cocain for the relief of nausea will prove of more than ordinary value in the treatment of obstinate vomiting of pregnancy, and may even be of more value in those morbid conditions of the stomach in which vomiting is not only constantly threatened, but in which

vomiting does great harm. Doubtless the strength of the solution will have to be varied to meet the requirements of individual cases, but for ordinary cases he has found a 2 per cent solution to have the desired effect. The effect usually lasts several hours.

For the reason that the filaments of the olfactory nerves are distributed principally in the mucous membranes covering the upper third of the septum of the nose, the superior turbinated, the upper third of the middle turbinated, and the upper part of the nasal cavities beneath the cribiform plates and ethmoid bone, it is advisable that the applications of cocain be forced well up into the nasal passages. If applied only over the lower part of the membranes, or the "breathing portion," which is not connected with the sense of smell, it is doubtful if any effect would follow. The accessory cavities or sinuses communicating with the nostrils are not all associated with the sense of smell. Therefore, if the cocain spray is forced well up into the nasal passages, effecting complete anesthesia of that portion of the mucous membranes governing the sense of smell, complete or more or less lasting relief of a prevailing attack of nausea may be expected to follow in nine cases out of ten.-Medical Standard, September, 1896.

MECHANICAL FACTOR IN THE ERUPTION OF TEETH HITHERTO UNRECOGNIZED. Read by Mr. T. E. Constant, M.R.C.S., L.R.C.P., L.D.S. Eng., before the British Dental Association, August 14, 1896. Briefly stated, the author's idea was that the pressure of the blood on the vessels under the teeth was the cause of the teeth moving into place.

Mr. C. S. Tomes thought the idea a very possible one, and it had certainly been overlooked, but the circumstances under which it occurred were perhaps a little more complex than might be supposed from Mr. Constant's presentment of it. Blood pressure was equally distributed in all directions so long as the tooth was surrounded by vascular tissue, and an erupting tooth before it got clear of the gum had blood pressure in front as well as behind. It was, perhaps, the author's idea that in the tissues in advance of the tooth, in the gum for instance, the blood pressure was kept in hand by the walls of the vessels, whereas in the tissue which he had often emphasized as gelatinous, and the tissue which was underneath it, the blood vessels had possibly less muscular tissue of their own walls, and so

the blood pressure was bottled up in comparatively rigid tubes and let loose to act on the so-called gelatinous tissue underneath the tubes. He did not know whether that was Mr. Constant's idea, but there was something necessary to enable them to form any idea of a blood pressure under a tooth overcoming a blood pressure above. As Mr. Constant drew his diagram, it seemed to suggest that the arrangement was, with a good many exceptions, like the arrangement of a hydraulic press in which there was one little tube containing water, the pressure expanding out into a big chamber, and the same pressure existing over the whole area, so that the effective force was much greater. But he was not in a position to discuss the question at a moment's notice.

Mr. Constant, in reply, said that Mr. Tome's suggestion had occurred to him as a very strong objection; but in the jaws that he had examined he had been struck by the great difference between the surroundings of the tissue overlying the tooth and that underlying it. He had been speaking of the purely mechanical aspect of the eruption. He was aware that while the root was going up there was a physiological process going on, and also another process, of which little was known, which was removing the superimposed tissue, so that it was only necessary to have a slight force constantly acting from below to cause the very slow gradual eruption that took place. The intermittent pressure given by the blood was highly favorable to such eruptions. If there was any insuperable objection to the idea he should be glad to know it, as he did not wish to perpetuate a fallacy.—Dental Record, September, 1896.

INCISIVE CONTOUR RESTORATION. By R. D. McBride, D.D.S., Detroit. One of the most perplexing cases that presents itself to the dentist is the restoration of the contour of the incisors where some constitutional malady, during the formation of the teeth, has caused a retarded development of the incisive portion.

As for the preservation and durability, gold is unquestionably the most superior material we have at our command for restoring the contour of the anterior teeth thus affected, but from an esthetic standpoint it is objectionable, for invariably it results in a disfigurement. However, this is modified by sex. Where we would not hesitate to place gold in the mouth of a man whose mustache causes an inconspicuousness of the teeth, we would extremely regret to mar

the appearance of a beautiful young lady by performing such an operation.

Porcelain has proven a failure, even in the hands of those who are most skilled in its manipulation, and to-day is nearly discarded. The great difficulty is its deficiency in strength and inaccuracy in adaptability. Owing to the shrinkage of porcelain during the fusing process and the liability of fracturing the edge in removing the platinum matrix, it is impossible to complete the contour of an incisor without a perceptible line of demarcation, and consequently it is a matter of but a short time when the cement is washed out and the ravages of decay are observed.

Frequently extreme cases demand the removal of the natural crown and the adjustment of an artificial substitute; but, unless a jacket crown is used, this is limited by the age of the patient. During youth it is essential to preserve the vitality of the tooth that the process of calcification may be completed.

When such an operation is deemed advisable, the following method has proved satisfactory in the hands of the writer: The anomalous formation of the individual teeth is ground off, finishing with a flat file. A set of Logan crowns, the proper form and color, are selected, and the pin portion is removed sufficiently so that the remaining incisive portion exactly completes the natural contour of the teeth, the final grinding being done on the side of the wheel, thus producing a most perfect union between the tooth and porcelain tip. Two anchor screws are placed in each tooth on either side of the pulp and two small holes are drilled in the porcelain with a diamond drill for the reception of the extended portion of the anchor screws. When the porcelain tips are cemented in place, the line of demarcation is wholly obliterated and the operation presents a clever deception.—Ohio Dental Journal, September, 1896.

LINING ROOT-CANALS. By L. P. Bethel, D.D.S., M.D., Kent, Ohio. Read at American Dental Association at Saratoga, August, 1896. In the treatment of teeth with devitalized pulps, a medicament that not only sterilizes the contents of the root-canal, but leaves behind an antiseptic deposit which prevents the subsequent development of micro-organisms, would be an ideal disinfectant. With this thought in mind I began a series of experiments, some months ago, taking nitrate of silver for the first agent.

We know how useful this salt has been in the treatment of certain superficial cavities in the teeth of adults and various cavities in the teeth of children, preventing decay as long as the discoloration remains. If in this location, where it is exposed to the varying conditions of the oral fluids, it will prevent subsequent decay for a considerable time, why should it not remain unchanged for a much longer period when sealed within a root-canal and remain, perhaps, as a permanent barrier to the development of germs?

Repeated attempts at pumping it into the canal by means of wooden points, broaches, etc., proved unsatisfactory, for the silver nitrate solution would not go beyond the point of penetration of the broach, and the cases most desired to treat were small, branching, or tortuous canals, where it was impossible to pass even a broach. By the aid of cataphoresis, however, the silver nitrate was forced beyond where the broach extended, into small canals, etc., as these specimens show. Microscopic examination shows that the nitrate of silver is forced, by means of cataphoresis, to a greater depth into the tubuli of the dentine, more thoroughly sealing them than when applied to the surface by ordinary mechanical means.

In the preliminary experiments out of the mouth the silver nitrate was used in connection with various agents, such as sulphate of soda, 1% H₂SO₄, etc., but the silver nitrate being itself a good conductor of electricity it was found more satisfactory when used alone in an aqueous solution, made from distilled water to avoid all organic material. Various strengths were employed, from 10% to a saturated solution, those giving the best results being from 40 per cent to 75 per cent solution.

The process of application is a simple one. Adjust the rubberdam, and if the crown of the tooth needs protection from discoloration, apply a thin coating of melted wax to the interior surface. Next apply the silver nitrate solution to the canal by means of a wooden toothpick or other suitably shaped piece of wood, pump it downward into the canal as thoroughly as possible, place electrode into pulp-canal opening, then a pellet of cotton, saturated with the nitrate solution, around electrode at the orifice of the canal and the electricity does the rest.

The electric current turns the cotton first a light green color, which grows darker until almost black, and serves as an indicator. The time of application will vary according to the condition of the

root-canal, whether well opened, its size, strength of current and per cent solution of the silver nitrate. The higher per cent solution the better conductor it makes and the quicker it is deposited. From one to five minutes seems to be ample time. After removing the electrode, cleanse the pulp cavity and canals as well as possible with dilute ammonia to neutralize the nitric acid set free, and also to hasten the darkening of the nitrate of silver.

In the majority of practical cases I have been using the nitrate after the root-canal has been sterilized, although in several cases it was used without previous sterilization, the cavity sealed and no after-trouble experienced.

This root-canal lining is not advocated for all teeth; indeed, the practitioner must use judgment in its application. It would not be advisable in the anterior teeth on account of discoloration, or teeth where the foramen is large, such as teeth not fully developed and others, on account of forcing it through the apex of root. Just what would result from such an accident I am unable to state from practical experience. I have tried to force the solution through the apex of a normal root, out of the mouth, but in every instance it has penetrated just through the foramen and stopped, due possibly to forming an albuminate when coming in contact with tissues at the end of the root and thus limiting its own action.

The object of these experiments is to find a means of treating root-canals that are too small to admit a broach, those branching or tortuous, those in flat-rooted teeth, etc., where it is doubtful about inserting a protecting root-filling. If such root-canals are thoroughly lined with the nitrate solution and it penetrates somewhat into the tubuli, as it does, the probability is that there will be no subsequent trouble, even though the root-filling should be defective. And, indeed, it is a question if root filling would be necessary at all, especially in small canals.

Roots treated by this process out of the mouth, when filed, reveal the outlines of the canals, their restrictions, obstructions and unlooked-for branches that probably would not be found in ordinary root treatment and filling, and would be left perhaps, as a harbor for bacteria to multiply in and cause subsequent trouble.

Discussion:—Dr. Abbott, New York, said that cataphoresis takes too much time. He uses chlorid of zinc and fills with oxychlorid. He thought the silver nitrate would permeate the

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tubules and become a source of danger to the cementum and pericementum.

Dr. L. L. Barber, Toledo, O., said that this treatment had proved satisfactory to him where other means had failed. He cited a case of a lower third molar, abscessed, that had resisted repeated attempts at treatment with various disinfectants, the tooth becoming painful after the dressings had been sealed in. One application of silver nitrate solution cataphoretically, as advocated in the paper, was used, the cavity sealed, and no inconvenience to the patient has been experienced since the operation.

Dr. Ambler, Cleveland, said that while he was experimenting with nitrate under amalgam fillings, Dr. Bethel suggested its use for root-canals and together they made some preliminary experiments. He had since operated on cases in the mouth and no trouble has been experienced. He does not operate on roots having a large foramen, but where the canals are small and it is almost impossible to pass a broach. Cataphoresis drives the medicament deeper into the tubules than when locally applied and this is an advantage. In the root-canal operated on with nitrate of silver you have an insoluble compound sealing the tubules and which cannot be penetrated by anything from outside. It is not intended for teeth of children or where the foramen is large. It is not claimed that the use of silver nitrate is new but this particular application of it certainly is. He has used it also with good results under amalgam fillings. There can be no subsequent decay as long as the dark deposit remains.

Dr. B. Holly Smith, Baltimore, asked how it was that the current of electricity would carry the nitrate along a tortuous canal.

Dr. Joseph Head, Philadelphia, said that as the canal was much larger than the tubules, it contained a greater amount of moisture, and was therefore a better conductor of the electricity which would flow in the line of least resistance.

Dr. James Truman, Philadelphia, said that nitrate of silver being a strong antiseptic would prevent the development of germs, but it would discolor the tooth substance. It would be carried into the tubules by osmosis and where would its limitations be, in the pulp cavity or in the cementum? He had applied nitrate of silver to tooth substance and found that it penetrated into the tubules. He preferred to use a medicament that would not discolor and recommended chlorid of zinc. Its application should not be by cataphore-

sis, however, for that would drive it through the tubules and would be apt to prove dangerous to the cementum or pericementum.

Dr. M. L. Rhein, New York, thinks that if an escharotic should be used that zinc chlorid offers superior advantages. We should use cataphoresis carefully, for the electric current reduces the medicaments to their nascent state.

Dr. J. Taft, Cincinnati, thought that the gentleman had an exaggerated view of the coloration of silver nitrate. In solution it is a colorless liquid. When applied no coloration is observed, but after a few moments it discolors. Nitric acid is set free and combines to a limited extent with the lime salts of the tooth. The silver is precipitated on the surface and not in the tubules as an oxid, which becomes inert as soon as its action is limited. The idea of possible discoloration should not stand in the way at all.

Dr. A. W. Harlan, Chicago, said that he made many experiments with teeth set in wax and plaster, and in the jaw itself, to test the penetrability of coagulating agents. A solution of silver nitrate will not penetrate the tubules to any appreciable extent; certainly not enough to cause discoloration of the tooth. The specimens passed around show that the oxid does not reach the cementum. He said he had a number of teeth imbedded, in which he had sealed nitrate of silver solution in 1804, but which he had not yet opened. He had any number of teeth in which the essential oils had been sealed. His experiments in this line have been very extended, and he knew what he was talking about. Chlorid of zinc, as soon as satisfied with water, stops its action. You cannot drive nitrate of silver through the apex of a normal root, for when it comes in contact with the tissues at the end of the root it forms a coagulate and limits its own action. You will not get a permanent discoloration of the dentine with silver nitrate solution, for, on account of its coagulating properties, its action is limited. He was glad that Dr. Bethel and other Ohio men were experimenting in this direction.

Dr. H. L. Ambler, Cleveland, said nitrate of silver had been often used for superficial decay and to prevent further erosion by applying it to the affected surface of the tooth. He had found that when applied to an eroded surface by means of a minute piece of cotton, saturated with the solution and the cataphoric current used, it penetrates deeper into the dentine and the effects are more last-

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ing. Silver nitrate is superior to other agents, for it makes an insoluble compound with the albumen of the tissues. In rootcanals, just so far as the dentine is moistened with the nitrate, you get the discoloration. He had experimented on pulps of freshly extracted teeth, and by means of the nitrate used cataphorically they were thoroughly destroyed. It might prove an efficient means of devitalizing pulps.—Ohio Dental Journal, September, 1896.

BRISK RUBBING VS. GINGERLY TREATMENT OF THE GUMS. By Dr. T. E. Lee, Washington, D. C. After citing two cases in which there was evidence of pyorrhea, and which were cured and the gums healed by vigorous, frequent brushing, he says: These are only two cases of many where brisk rubbing proved to be of inestimable value. I have in my mouth a lower incisor, the gum of which in early life receded considerably, retreating before the progressive accumulation of tartar. If for two or three days I fail to bring my brush well down on this place in cleaning my teeth, the gum surrounding the vacant place on the labial aspect of the neck and root becomes soft, loose, swollen, red and tender, with a strong tendency to increased recession. When this state of affairs is discovered. I take the brush and give the place a brisk rubbing regardless of the small amount of pain and some bleeding. Within a few hours the gum feels and appears well, and the recession is not nearly so marked.

My deductions: 1st. That the proper circulation of pure blood in the gums (as in other parts of the body) is necessary to maintain their health and vigor; 2d. That sufficient exercise is needed to secure good circulation; 3d. That gently rubbing the gums up and down is not adequate, but that brisk treatment with a brush of medium stiffness is required to secure sufficient exercise and remove all mucous secretions. More people rust out than wear out; so more gums rust away from lack of exercise and from poisonous accumulations lodging within their free margins than wear out from too much or too severe brushing. These accumulations, be it remembered, are not composed entirely of soft food. They have a considerable proportion of serous exudate, which, like most exudations, becomes foul and poisonous after long exposure to the air. The results of these deposits are always disastrous to both teeth and gums. Erosion of the necks of the teeth is mainly chargeable to

their account. The soft, loosened condition of the gum margins is certainly to be credited to them. Nature, in all her phases, is opposed to unclean things. Ordinary wear and tear is never so bad as the rust of neglect. In my ten years of dental experience I have never seen any explanation of the causes of serumal deposits under the gums other than those attributed to conditions of the blood, etc., that is, superabundance of inorganic substances. In my opinion, it is more clearly traceable to these soft accumulations, together with salivary calculus, acting as a dam at the necks of the teeth, preventing the escape into the mouth of the serumal exudate. This, finding no means of egress, decomposes; its inorganic properties being deposited on the teeth as serumal calculus, its organic constituents become the pus of pyorrhea alveolaris.

Ilhave frequently had patients suffering from pyorrhea mildly or severely. Though almost always of a chronic nature, it is generally accompanied by quite an amount of tartar. I invariably remove as thoroughly as possible all traces of tartar, wash out the pockets with "peroxid," then with warm water and carbolic acid. Most do well under this treatment, though occasionally a patient will return after a few days, suffering intensely from an acute sub-marginal abscess, which, after lancing and washing out, usually disappears permanently. I attribute the forming of the abscess to the fact that after the removal of the tartar, the teeth having been well cleaned, the gums at the margin shrink back proximately to the normal positions they occupied prior to the formation of tartar. And in the act of shrinking they imprison some of the poisonous germs of the diseased condition, which, having no means of escape, produce abscess. Riggs' disease is so distinctly and rapidly progressive in some cases, because of the very facts I cite, and because the deposits at the necks of the teeth make the gum-margins so soft and tender that the use of a toothbrush is extremely painful. The result is that they are never properly cleaned until they come into the dentist's hands. Meanwhile the ravages are steadily going on. - Welch's Monthly, September, 1896.

PYORRHEA — A CRITICISM. By B. F. Arrington, M. D., D.D.S., Goldsboro, N. C. In the July issue of the *Dental Cosmos* is recorded a paper from Dr. S. W. Foster, of Atlanta. The paper is of real merit and interest, contains statements and presents facts worthy

of careful consideration, and should be treasured and kept for reference; but on page 570, seventh paragraph, the doctor takes, I think, a false position in relation to cause and effect, and if his position, as stated, is accepted as orthodox, it will lead astray the uninformed and those who are deficient in practical experience.

The paragraph reads as follows: "It is rarely that we see a consumptive in whom we do not find a typical case of pyorrhea, or, at least, pus discharging from around the necks of the teeth, and it seems that the breathing into the lungs the effluvia from those suppurating sinuses of the mouth might produce this fatal disease."

Now, the question arises, and the point I make is this: That with consumptives we do not find typical cases of pyorrhea more frequently than among any other class of patients. In some cases we do find the teeth and gums seriously neglected, as with other types of disease, or when there is not disease, and all that is requisite for a normal state of teeth and gums is the free use of the toothbrush.

Consumptives, as well as persons suffering from any other malady, are liable to be troubled with pyorrhea, but never as the production of tuberculosis. The "pus exuding from around the necks of the teeth" is often seen in the mouths of consumptives, and more frequently with young than old persons, and mostly around the lower molars. It is a feature (not universal) in tuberculosis, and has no connection or dependence whatever upon pyorrhea. The margin of the gum is seldom ever affected, and the pus is clear and unadulterated, never mixed with blood as in pyorrhea.

Pyorrhea treatment will not (cannot) check the formation and discharge of pus in a case of tuberculosis as it does in pyorrhea. Pyorrhea is a disagreeable, and often, when far advanced, a loath-some and offensive disease, and sometimes very injurious to health, but cannot produce, and never is the cause of, consumption.

In the discussion following page 572, first paragraph, Dr. F. P. Gale, of Atlanta, is quoted as saying: "Another case of a woman who had been confined to her bed for several years suffering with symptoms of general debility, and was apparently almost a dying woman when he was called to examine her mouth. He found all the teeth affected with pyorrhea; removed all, and made her a full upper and lower set. The result was, the poisonous pus being no longer taken into her system and the ability to masticate food restored her, she regained her health and strength entirely."

Questionable practice. Was such a procedure admissible, and did it accord with professional progress and advance in dental practice? Would it not have been wiser and better practice, and more abreast with the times, to have treated for the cure of pyorrhea, checked the pus discharge, restored the gums to a normal state, and preserved the natural teeth firm in their sockets, rather than have extracted all and replaced them with artificial teeth? Unquestionably the effort should have been made. Extracting "all the teeth" should be the last resort in the treatment for relief and cure of pyorrhea. The idea advanced by some dentists, that nothing short of extracting the teeth will cure pyorrhea, is a weak theory and is doing harm. Such an idea should be silenced and universally repudiated.

On the same page (572) Dr. E. S. Talbot, of Chicago, says: "In many cases the low state which favors consumption is caused by pyorrhea and other troubles in the mouth. He has one patient who has tuberculosis, who comes to him two or three times a year to have pyorrhea treated. The effect is always to build up his strength for the time, but the condition returns."

Something wrong here—diagnosis, possibly, in fault. Let us reason together and see if there is any sustaining good reason for presuming that pyorrhea has any tendency to produce or in any way aggravate or speed the progress of consumption. In the first place, we know that inflammation of the soft tissues in most extreme typical cases of pyorrhea does not spread and tend backward and downward to fauces and trachea, as inflammation from other causes does, but is strictly confined to narrow limits (the gums), seldom ever advances more than a few lines from the gingival border, and but very seldom is there acute sensation from pyorrheal inflammation, especially after the disease has advanced to the suppurating stage. These are facts non-controvertible, therefore there can be no injury to lung substance from pyorrheal inflammation.

As regards the pus discharge and the passage of it into the stomach, it may (very probably does), to some extent, impair digestion and affect the general tone of health, but how it is possible to tend specially unfavorable to the lungs and cause or increase tuberculosis, is something I cannot comprehend. If the pus production in a typical case of pyorrhea is so weakening and hurtful to the lungs, what of the effects of an extreme case of catarrh in the head? We

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frequently see delicate, feebly constituted persons (male and female) subjects of catarrh for years, and no signs of consumption. The pus generated, abnormal secretions and unwholesome effluvia emanating from such a source must be more hurtful and disease-producing than from pyorrhea. It is not always a "low state" that favors consumption, except through heredity. I have known the best constituted and most robust men to be stricken down from outdoor exposure, and die with consumption in less than six months. Then I have known men of feeble constitutions, all the while on the decline, seemingly consumptive, yet they linger for years and die of some other disease. I have known men and women of frail constitutions to suffer for years (twenty or thirty) with pyorrhea, blood and pus all the while discharging, gums festooned and entirely separated from the teeth, alveolar process wasting, teeth loosened and dropping out, without the slightest trace of lung trouble and the digestion not impaired in the slightest degree, and have witnessed corresponding cases with persons of robust constitutions.

The patient (consumptive) whom the doctor treats several times a year for pyorrhea, and always with temporary relief, is undoubtedly a case of genuine tuberculosis, and there is discharge of pus around the teeth, as the doctor represents; but it cannot be from pyorrheal cause, for there never is pyorrheal pus discharge unless there are deposits on the roots of the teeth. If the deposits are successfully dislodged and removed, followed with requisite treatment for cure, the reproductions cannot be so frequent. However, if it is a case of pyorrhea beyond question, then the presumption is that the doctor fails of thorough removal of the deposits, and fails to apply in sufficient strength a dissolvent and remedies to stimulate and tone up the soft tissues and establish a normal state of the peridental membrane. It is either not a case of pyorrhea or the treatment is out of line for cure.

Only through discussion, investigation and criticism can we come at facts and establish truth. Simple statements of cases in practice, and assertions as to cause and effect, treatment and results, are often profitable to us, but must not always be accepted as truly orthodox and not to be questioned. Cause and effect are factors, and diagnosis a potent factor that must lead and point practice.—
Southern Dental Journal and Luminary, September, 1896.

FORMULA FOR ODONTALGIA. The following remedy for odontalgia pulpitis has been employed with good results by Dr. S. Wotjoff:

R Cocain hydrochlorate, o.r Camphor, 5. Chloral hydrate, 5.

To this mixture add a few drops of water, thus producing a clear liquid. Saturate a pellet of cotton with the remedy and insert it in the aching tooth and permit it to remain about one day. If the pain still continues renew the treatment and the ache invariably ceases. The author has resorted to this drug in many severe cases and has met with exceedingly satisfactory results.—Translated by Dr. B. J. Cigrand from Zahnarztliches Wochenblatt, August, 1896.

CHLOROFORM AND ROOT-CANAL TREATMENT. Dr. Cohn, of Berlin, says: "The treatment of root-canals having putrescent contents is familiar to all, especially that relative to proper disinfection and necessary reaming. Notwithstanding the numerous remedies employed, a new medicament is in demand, since present treatments are not entirely satisfactory. I have of late made many experiments with chloroform and must say have effected grand results. The following three points I have observed as worthy of note: 1. That chloroform possesses powerful antiseptic properties and excels many drugs now employed in destroying bacteria. Further, it has the advantage of not coagulating albumen, and in consequence does not hinder, as does carbolic acid, a perfect antiseptic effect. 2. Chloroform, as is well known, softens fatty matter, and, as there is present in putrescent pulp considerable fatty substance, the chloroform will materially aid in softening the fatty contents, and in consequence be converted from a papescent to a liquid condition. I also learned that the canals were cleansed more readily by employing chloroform, and the dryness which results is an additional advantage in case the canal is to be immediately filled. 3. If you employ a pellet of cotton saturated with chloroform, and perfectly seal it in the root-canals, the vapors of chloroform will permeate to the farthest extremity of the root and thus perfectly antiseptisize the canal. Sealing the coloroform in the pulp-chamber should not be done until you have first employed it in eliminating the putrescent pulp; its subsequent use is to assure thorough disinfection of the canal. In short, I administer the chloroform much after the same manner as we do carbolic acid, or any of the other generally employed agents."—Translated by Dr. B. J. Cigrand from Zahnarztliches Wochenblatt, September, 1896.

ALCOHOL AS AN ANTIDOTE TO CARBOLIC ACID. Recently a woman in an attempt at suicide drank over an ounce of carbolic acid in a tumbler of whisky. The immediate service of Dr. Fraser was secured, but he was completely at a loss as to the cause of the patient's ailment. The bottle containing the acid was found close at hand, however, and the doctor recognized in the patient's breath the carbolic odor, but what seemed to dumfound the physician was the fact that the mouth, lips and tongue were free from the escharotic effects of the drug. He immediately flooded the stomach and continued to rinse the same until he had liberated the acid vapors. The patient was soon resuscitated and eventually fully recovered. Since this experience Dr. Fraser has made many discoveries relative to carbolic acid antidotes, but the one fact which will interest the dental profession most is that in the event of the unfortunate circumstance of accidentally applying carbolic acid on a patient's lip or skin, he recommends bathing the burned surface with alcohol, whereupon immediate relief is rendered and the eschar readily disappears .- Translated by Dr. B. J. Cigrand from Zahnarztliches Wochenblatt, September, 1896.

APPARENT CASE OF SALIVATION. By C. W. Stainton, D.D.S., Buffalo, N. Y. The recent sickness and death of a neighbor seventy-five years old furnishes a case of interest from both a medical and a dental standpoint.

In the nearly score of years I have known her she has never been strong. Her appetite was very delicate, and but few things could be tolerated, and food in very limited quantity could be taken at once. During the latter part of the past winter she had not been as well as usual, and one of our brightest and most progressive medical men was called to attend her.

He found her entirely free from cardiac, kidney, or hepatic complications; she seemed to be suffering solely from lack of nutrition, and efforts were directed toward obviating this difficulty. A few days' trial seemed to show that progress in this direction was not

likely to be encouraging, from one-half to one teaspoonful of beeftea being the limit. Any larger quantity caused considerable distress and was soon ejected. The secretion of saliva was abnormally large, and this constantly swallowed saliva was ejected toward the close of each day. After some time spent in unsatisfactory trial the physician in charge called in consultation a professional friend, who has made gastric troubles a more especial study than any one else in our city.

The attending physician had for some days entertained the suspician that an old, red-rubber upper set of teeth, which had been worn for twenty-five years, might be the source of the trouble. The appearance of red, inflamed patches of the mucous membrane under that ill-fitting plate (a condition well understood by dentists as due more to mechanical irritations from ill-fitting, loose-shifting dentures than anything else) and the increased flow of saliva pointed in this direction.

The consulting physician coincided in this view. A suspicion was entertained by both that the pancreas was not performing its full duty. If this were true it would in part explain the conditions present. The set of teeth was removed from the patient's mouth and turned over to the professor of chemistry in the University of Buffalo. He took showings from the plate, applied the proper tests and found mercurial reaction. The suspicion that mercurial salivation was the chief trouble now seemed proved. Death of the patient subsequently occurred.

An autopsy revealed a stomach very much reduced in size, as though a surgical operation had removed all the depending portion, so that its appearance resembled a section of the large intestine. This may offer an explanation of the small quantity of food tolerated at one time and also the periodical rejection of the swallowed saliva. The liver was reduced in size considerably, but was secreting bile; the duct, very small, was open and bile found in it as well as in the duodenum. The gall-bladder was full of gall-stones. The pancreas, like all the viscera, was much reduced in size, its structure considerably changed, the connective tissue unusually abundant and the pancreatic duct *entirely closed*. No pancreatic juice could have been poured into the duodenum for a long time past. This discovery put a new face on the matter. It was easy now to understand the increased flow of saliva. One of the digestive glands being

practically obliterated, a vicarious effort had been made on the part of others to make good the loss.

See what proofs—strong as holy writ, in the hands of some theorists—we have here to prove a case of salivation from wearing a red-rubber plate. 1. The sore patches of mucous membrane. 2. The incessant flow of saliva. 3. The gradual wasting away of the patient. 4. The mercurial test.

The attending physician reported to me that the chemist found free mercury. This was an error. The test was a very delicate one for any preparations or forms of mercury. No free mercury was found.

It is a matter of regret that since the days of Wildman nothing has been added to our literature on rubber and its composition. Some careful, patient, chemical, microscopical student has a large and important field awaiting him in this direction.

[Investigation of this question was very exhaustively made by the Pennsylvania Association of Dental Surgeons of Philadelphia about twenty-five years ago. That society appointed a committee, consisting of Drs. Wildman, Buckingham and Truman, to examine into the subject. The mechanical, chemical and microscopical were given to each in the order named. The report, in substance, demonstrated that the amount of free mercury present in vulcanized plates was infinitesimal, and on the polished surfaces nothing could be found. The writer of this, in numerous sections examined, found in two or three instances exceedingly minute globules under high powers of the microscope; but so thoroughly imbedded were these in the impervious rubber that the possibility of causing local disturbance could not be entertained.

The cause of mucous irritation is no doubt due to uncleanliness on the part of patients and the presence of micro-organisms on the plate, as shown by Dr. Black. The fact that a daily antiseptic wash prevents this irritation demonstrates very clearly the cause, and that it has nothing to do with free mercury supposed to be in the coloring substance (vermilion) of the rubber. Ed. International.]—International Dental Journal, September, 1896.

CONCERNING VULCANITE. By Dr. C. A. Allen, Buffalo, N. Y. Read before the Second District Dental Society of New York State, March 11, 1895. The physical changes which vulcanite undergoes during the process of its becoming a solid body are, I

think, little understood. At any rate, the remedy for many of the evils of unscientific treatment is too rarely employed.

To begin with, let us briefly consider the elementary character of this body. The gum as it comes to the manufacturer is purely a vegetable compound, a hydrocarbon, made up of H_{16} C, (however, upon these proportions authorities differ, but not to the injury of our argument). Sulfid of mercury, which renders the body of use in our art, is now added in the proportion of one to two of rubber. We now have a compound which, when properly treated, produces a uniformly dense and sufficiently strong base for our purposes.

Some of our high attenuationist friends of ''little pill'' fame boldly declare red vulcanite plates to be the origin of all obscure physiological derangements, charging, as they do, that the coloring pigment is red oxid of mercury, which is highly irritating to mucous tissue. The absurdity of this charge is clearly manifest when it is stated, as a matter of fact, that our coloring pigment is simply sulfid of mercury. This preparation possesses no toxic or even disturbing physiological effects whatever, and may be brought into mucous contact with impunity.

Experimentation by thorough processes, aided by the most delicate instruments, has demonstrated that the quantity of mercury which it is possible to evaporate from a vulcanite plate before actually destroying the body itself is only infinitesimally small. Remember that in order to have even this slight manifestation of the "enemy's" presence a high degree of heat must be attained, a condition which could not be sanely looked for in the human mouth.

In the process of vulcanization it is readily conceded that we first have fusion of the component parts of the body under treatment, which occurs at certain definite temperatures.

What are these points of fusion? Any work on chemistry will place you right on the melting point of the sulfur in the mercury compound—and that will be 237 deg.+F. As to the melting point of the hydrocarbon compound (rubber), elaborate experiments by Dr. A. P. Southwick prove, beyond the possibility of controversy, that this will be at 248 deg. F.

Now, with the component parts of our body all fused, we may naturally expect the commencement of that remarkable and little understood physical change in the compound which we term vulcanization. That this change does begin at once upon the fusion of the compound's ingredients, and that vulcanization as we understand it may be fully completed without the addition of a single increment of heat, is easily demonstrated. All that possibly could be required in addition to the present conditions would be a continuation of the 248 to 250 deg. F. over a longer period of time. If doubt exists in the mind of any one present as to the truth of this statement, let me suggest to him that he can easily obtain a "lazy man's proof" of it by asking any manufacturer of rubber garments how he treats the articles as to temperature, time, etc.

Continuing in my quotations of the authority mentioned, I fearlessly make the statement that the actual destruction of vulcanite begins at 300 deg. F. and continues in proportion as the temperature is raised to 600 deg. F., where rubber will be entirely dissipated, the sulfur being affected in the same manner at 824 deg. F.

Now a word in regard to vulcanizers and their use. It should always be borne in mind that the degree of heat indicated by the mercury bath thermometer never registers the degree of heat corresponding to that of the inside of the vulcanizing pot where the case is being treated. The figures for this statement are as follows: If the stratum of atmosphere inclosed in the pot above the water line (when the cap is adjusted) is not expelled upon a degree of heat sufficient to generate steam being reached, we can always confidently rely upon our thermometer registering from 15 deg. to 18 deg. F., according to the amount of water, below that actually existing within the chamber. Not only this, but we must always be prepared to take into account a considerable loss of registering power of the thermometer through the radiation of heat, the convection of air currents, temperature of room, etc. To these influences you can always safely charge a loss of registering power of the thermometer of at least 15 deg. F., and usually more, often 20 deg. F. If these figures can stand verification, and I declare that they can, what will be the result? Simply this: the man who does not expel the atmosphere from the pot really subjects his case to at least 30 deg. F. of temperature more than that indicated by the thermometer. If he does expel the atmosphere he still has 15 deg. F. more than that registered. From this point our deductions are easy. We have declared that the destruction of vulcanite begins at 300 deg. F. actual. As an illustration of this point, let us imagine a case being treated at the old-fashioned 320 deg. F. without regarding these two influences. The result is easy. Instead of 320 deg. F. we have at least 350 deg. F. If the stratum of atmosphere is expelled we still have 335 deg. F. to which our case is being subjected. If these figures and those preceding them are correct, we find ourselves treating vulcanite anywhere from 50 deg. F. down to 35 deg. F. above where the destruction of the compound actually begins. We are now asked what will be the manifestations of this unscientific treatment of the most abused and least understood body in the dental world. Every child in the land associates with rubber the property of elasticity, and that to the degree of exceeding in this respect any other body known to him. Do the high-temperature plates retain this characteristic? By no means; on the contrary, they have entirely lost it. Why? Because the extreme temperature to which they have been subjected has destroyed this natural inherent characteristic.

The early workers of vulcanite will tell you to-day that we cannot produce a plate which can be constricted at the heels, as they "used to do," and thereupon see it return to its former relations. The reason for this is obvious. The pioneers in vulcanite were instructed to vulcanize at a low temperature, about 280 deg. F. Besides this the machines placed upon the market at that date were so constructed that the heat was carried up and redirected upon the pot. thereby losing but little by the convection of air currents and radiation. If this be true, we now have to account only for the loss of the registering power of the thermometer by virtue of the stratum of air left in the pot. We have stated this in degrees to be equal to from 15 to 20 deg. F. This reasoning will easily solve the true degree of heat to which the case was subjected, and at the same time demonstrate why that property of elasticity was not lost in the work of the vulcanite pioneers. The next manifest injury to the base for our purposes will be in its extreme contraction. It should be borne in mind that vulcanite is affected by thermal changes more than any other solid body. Its rate of expansion in ordinary temperatures is somewhat over six times that of iron, about five times that of brass, and nearly four times that of zinc. This extraordinary expansion upon the application of heat will conversely manifest itself by contraction when the opposite thermal condition is applied. How and where will this extreme contraction be manifest in dental plates? If your case be of the stupidly contrived "gum sections" it

can express itself only at one point, namely, by a contraction at the "heels," and a consequent raising of the body from contact with the model, most manifest at the posterior part, but really extending itself well anteriorly. How can this be demonstrated? There is but one way. Preserve your model after vulcanization, and restore the plate to it, when the extreme degree of contraction will be only too manifest. The base will have no manner of contact at its posterior part with the model upon which it was vulcanized. This contraction, in case of the use of "gum sections" with properly ground joints, must necessarily be at the rear, as the arch cannot be crushed. In the use of "plain teeth" the contraction is diffused throughout the entire plate, and consequently does not appear so prominently at the point mentioned.

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The question may be asked, "How can the model be preserved?" This is perfectly easy. As soon as the temperature is reduced to the proper point, open the flask, remove the denture from the model, and at once place the model over a gentle heat for a time sufficient to expel all moisture. Another result of excessive temperature in vulcanization, and the inevitable contraction in the molecular rearrangement which will follow, may manifest in cracked sections or "chipped" joints. Still another condition may present the case with one or more "spongy" points, usually to be expected at the thickest part of the body. The writer's deductions from the foregoing are that all bodies of vulcanite treated at a temperature above 300 deg. F. (actual) will show: 1. Destruction, increasing proportionately with temperature elevation, and loss of elasticity. 2. Extreme contraction, resulting in the plate having no membraneous contact across the posterior part. 3. Broken or cracked sections, or "slivered" at joints. 4. Sponginess of vulcanite at thickest portions, which may be manifest over a considerable surface, or may appear only at certain points in size and shape quite like a split pea.

Remedy.—Any or all the foregoing results may be obviated by maintaining a temperature within the vulcanizing pot throughout the entire period which shall not exceed 300 deg. F.-Dental

Cosmos, September, 1896.

GOLD FILLING, WITH SPECIAL POINTS FOR HAND-PRESSURE. By A. D. Barker, D.D.S., Grinnell, Iowa. Read before Iowa State Dental Society, May 6, 1896. The common gold plugger may be defined as a piece of steel with the end cut off flat and grooved across both ways, or serrated. Whatever may be the size of this end or point, it is still a cross-cut flat surface.

To obtain the best results, the direction of all force applied to such an instrument must be at right angles to the plane of its surface. As an aid in this constant effort to bring the face of the plugger down square with the surface of the gold, we have the shanks bent so as to bring the faces at almost every conceivable angle to the handles. This multiplies the number of instruments beyond all reason. Besides, it is neither convenient nor possible to change instruments often enough to meet practically all the varying conditions of many cavities. Consequently we do the best we can with a more or less limited number of instruments, and are often filled with misgivings as to the adaptation of our gold. If one point does not suit, we try another, which is likely to be "equally successful." So I have suffered many things of many plugger points and was nothing bettered, but rather grew still more discontented.

In the meantime I was continually but vaguely longing to disregard the face of the plugger and to apply force to the gold, not in one direction only, but sidewise, cornerwise, and in any direction that occasion might require; to know that the gold was spreading right out against the walls of my retainers, or against the cavity-walls or margins anywhere.

About the first light that reached me on the subject came from Dr. Royce. He did much valuable work along this line, but his pluggers did not meet my requirements. I made my retainers mostly with round burs, and I wanted points that would make the gold fit them perfectly.

Finally a new view of the situation presented itself. After we have removed the decay and defined the margins in almost any tooth-cavity, what do we do? Simply take up the hand-piece with a bur of suitable size, and shape it so it will retain the gold. Now here is the point. If one straight instrument will shape the cavity, why should several crooked ones be required to fill it? Again, if the cavity is shaped with a round instrument—the bur—how can we expect to fill it perfectly with flat ones? After getting this far, obviously the query was: Why not fill the cavity with a plugger shaped exactly like the bur that shaped the cavity? With such a point the gold must of necessity fit the retainers. We can reach

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anywhere with it that we can with the bur. The sides of it will carry the gold perfectly into any undercut made by the side of the bur. One instrument takes the place of several. And as to the adaptation of the gold, it is accomplished, as I believe, to a degree of perfection rarely before attainable.

I have here ten instruments for your inspection, which more than satisfy the conditions named. The foregoing account of the evolution of the idea is given that you may the better see why I produced them. As to the manner of their development into the present form, it is perhaps unnecessary to speak. All of them are double-enders, made so because one point often follows the other in the same place, and it is easier to change ends than to change instruments.

The character of the points may be indicated by saying that they are simply flat, round and ball burnishers, cut one way. This is true of all but two. One has both points smooth for final burnishing. The other has two flat burnishers, one being cut lengthwise and the other crosswise. Each of the others has a ball on one end and a plain, round-ended burnisher on the other, all cut one way. The points on each end are the same size. One is made without the ball to prevent the gold from curling around it when being carried into a deep cavity.

Of these eight, four have a slight curve in the shanks, the other four a full curve. Each shape has four sizes, marked by one, two. three and four lines around the handle, according as the points are respectively slightly under the size of Nos. 1/2, 1, 2, and 3 round burs. All of these may be used with simply pressure, or with a steady rub lengthwise of the serrations. What satisfaction I have taken in rubbing the gold right down over the cervical and oral margins! I have never been able to convince myself that firm pressure with the hand was not the surest way to adapt gold to any surface. I do not think there is sufficient time on the instant of receiving a blow for the particles to slide past each other properly. As you know, gold spreads better under a round point than any other, and in the one-way serrations we have a series of wedges forcing it together. For filling the inclosed point of any toothcavity, I believe nothing can equal such points as these, after their use is learned. When the filling has become flat, or nearly so, any preferred method may be used.

Now we come to the most noticeable feature of the instruments,

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times it may take one or more local applications on the tonsils. It does not require any length of treatment.

By not treating the stomatitis, the inflammation, if expressed by tonsilitis, pharyngitis, laryngitis, etc., will demand persistent treatment.

Case 1.—Stomatitis, the result of salivary calculus. Inflammation extending down to tonsils, causing acute tonsilitis. By removal of the tartar the stomatitis was cured; this was followed by disappearance of tonsilitis.

Case 2.—Patient single, aged about twenty-three years, presented herself with stomatitis, the result of a very painful alveolar abscess, caused by the roots of a superior third molar. Previous history: Always a sufferer from tonsilitis, laryngitis, etc. Tonsil glands removed about eight months previous to this attack. Before abscess manifested itself patient's throat was in good condition. When this abscess started, which caused a severe stomatitis, patient remarked that the inflammation seemed as though it was extending down into the throat. On the next visit patient had same old complicated trouble, which would not have occurred had this abscess not developed.

Case 3.—Lady, married, aged about twenty-four years. Stomatitis, the result of an erupting inferior right third molar. Patient noticed soreness over the locality of the erupting tooth. Tonsilitis was present. Was treated for this by a physician, without any good results. Patient presented herself to me in above stated condition. I immediately lanced over erupting tooth. As an experiment, and not to intrude on a physician's right, I made an application of tannic acid with glycerol to the tonsils. The next day patient could talk and swallow, and in a few days was perfectly well.—Dental Cosmos, September, 1896.

THE BLACK TEETH OF THE SIAMESE.—We see that the blackness of the Siamese and Burmese teeth is, on the authority of an Indian missionary, not caused by chewing betel nut and lime, as is often thought, but is produced by a regular process of varnishing. The kernel of the cocoanut is first charred and then ground up with oil to a fine paste. This is then, by some process known to the natives, converted into a hard varnish, which is applied to the teeth and allowed to dry on. Eating does not seem to affect it, and the blacker and more polished the teeth appear, the greater their beauty. No Burmese belle would consider herself beautiful if her teeth were white like a Chinaman's or European's.—Brit. Jour. Dent. Sc.

the large handles, and another very important one, the short shanks. The latter bring one close to the work, and the former give a firm grip, without tiring the hand. Both are copied direct from Dr. Libby, and are most valuable, as is also the building up of gold by rubbing or burnishing, although I find it too difficult to use smooth burnishers, as he does.

While it is possible to fill any tooth-cavity that can be shaped with the straight hand-piece with these points in a straight handle, I find it usually more convenient to have a slight curve in the shank, and sometimes even the full curve. Those with the full curve are certainly all that are necessary for use after the right-angle hand-piece.

Unless you are entirely satisfied with present methods, I wish to be very emphatic in recommending not only these points, but the complete instruments, to your careful consideration. While no one should hesitate at any time to make use of any other plugger, if it seems desirable, I have found myself recurring less and less to old forms as I learned to use the new, and to appreciate the advantages of the principles involved.—Dental Cosmos, September, 1896.

STOMATITIS THE CAUSE OF VARIOUS THROAT DIS-EASES. By Isidore Lett, D.D.S., Philadelphia. It is more fully recognized every day that dentistry, although a science in itself, is an important branch of medicine, and that it is necessary for us to co-operate with general practitioners. In support of this assertion I have had several cases which I will describe.

I have noticed repeatedly when a patient has acute stomatitis that the throat will invariably remain unaffected; but when this acute condition develops into a chronic state, the throat will be affected by the inflammation extending down along the mucous membrane, attacking the tonsils, the most common seat of attack, resulting in tonsilitis, or even advancing to and embracing the pharynx or larynx.

Now, how far should a dentist pursue his treatment? Although he may be able to treat tonsilitis, it surely is not more permissible for him to do so than for a physician to treat an alveolar abscess, the result of a putrescent pulp.

I have noticed in tonsilitis, the result of chronic stomatitis, that a cure can be effected by successfully treating the stomatitis, or some-

ment, and their results. The committee also hopes that the leading college faculties will illustrate their methods of training, etc. A number of state and local societies have indorsed the action of this association in the premises, and appointed committees auxiliary to this committee.

As to the kind of specimens desired, anything illustrative of any part of dentistry, or which would, alone or in connection with other specimens, throw light on the etiology, pathology, or treatment of diseases and deformities of the teeth, jaws, etc., would attain a greatly enhanced value by being placed here.

Referring to the library, the largest and most complete of its kind in existence, the report suggested that voluntary contributions by publishers and authors would permit the money available for the purchase of their works to be used in other directions equally essential.

As a feasible plan of continuing the work already begun, the report suggested the appointment of five members of this association as a national committee, charged with the duty of promoting the effort to build up a great national dental museum and library; and that this association recommend the appointment of committees auxiliary to the national committee by each of the local, state, and other dental societies in the United States; and that the sum of \$100 be appropriated, to be used with other donations, for the purpose of defraying necessary expenses.

The report was adopted, and the national committee recommended was appointed at a later session, as follows: Drs. Williams Donnally, Washington, D. C.; J. Taft, Cincinnati, O.; H. J. McKellops, St. Louis, Mo.; Henry W. Morgan, Nashville, Tenn.; Thos. Fillebrown, Boston, Mass.

Considerable has already been accomplished. For instance, Dr. Flagg, of Philadelphia, has promised to arrange and donate all of his models, charts, diagrams, etc., used in connection with his lecturing, and showing the changes and improvement in methods of teaching. Several other prominent members of the profession have promised to give their valuable collections to this institution. Some societies have already fallen into line, but it is desired that No money nor anything of comevery society shall cooperate. mercial value is desired or needed, the institution being abundantly supplied with funds, but everything of value to dentistry as a science and art is desired, and will be properly cared for and exhibited to over 60,000 people and 5,000 post-graduate students annually. Every specimen contributed should bear a correct label, a concise history, the name of the contributor, and be addressed to the Army Medical Museum and Library, Washington. The committee invite correspondence and will otherwise, in any way possible, serve the profession in furthering the object for which they were appointed.

Yours truly, M. F. FINLEY.

Letters.

NATIONAL DENTAL MUSEUM AND LIBRARY.

WASHINGTON, October 10, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—I think your journal could aid this work materially by printing a concise statement of the object it is aiming to attain. The committee appointed by the American Dental Association in August, 1895, issued a circular letter with reference to the Army Medical Museum and Library, urging the profession to cooperate by sending books, models, etc., and appealing to the state and local societies to appoint auxiliary committees to gather specimens illustrative of all subjects of dentistry.

The following is taken from the proceedings of the recent meeting of the American Dental Association:

Dr. Williams Donnally, chairman of the committee on National Museum and Library, read the report, of which an abstract follows: After reciting the purpose of its appointment, to cooperate with the officers in charge of the Army Medical Museum and Library in enriching its stores of dental literature and museum specimens, the committee referred to the immense value of the opportunity herein afforded the dental profession to accomplish essential objects otherwise impossible of attainment. Never was there opportunity more freely offered a profession to demonstrate its value, to acquire a higher rank among the learned callings, to acquaint the professions and the general public with its achievements, and to secure the preservation, classification, exhibition and facilities for the study of all things pertaining to it of present or future historical and educational value.

The museum contains more than 35,000 specimens, and, like the library, is open to the public, the intellectual property of all professions and classes. Its dental section may be made its most attractive department and the greatest object lesson of its kind in the world if the efforts of the management are met with a corresponding interest on the part of dentists. Dr. D. L. Huntington, deputy surgeon-general, the chief officer of the institution, has recently acquired by purchase a number of valuable and beautifully mounted specimens, most of which are rare. He also purposes to transfer to the dental section such objects as are of special interest to dentists, which are now classified in other sections or distributed through the large general collection, enriching our section with many valuable specimens which dentists could never acquire from their own resources.

The number of accessions so far from the efforts of the committee is small—perhaps one hundred—but an interest has been aroused which warrants the expectation of contributions of the kind needed, namely, series of models, apparatus, drawings, etc., illustrating various operations, methods of treat-

NEW YORK LETTER.

NEW YORK, October 20, 1896.

To the Editor of the Digest,

Mr. Editor:—The incoming steamers are bringing to our shores material for the *incidental* gatherings that occur each month. Not a few men have gone over during the season, and those who did not put in at Dresden in attendance at the American convocation, did not lose their attendance at Nancy. The latter and our W. W. Walker had a greeting, and, according to L'Odontologie, it was cordial and hearty and he made a good impression.

It is very probable that the visits will be returned during the coming season by no less notable personages than Dr. J. Leon Williams, of London, Mr. Mummery and Magitot, and President Spalding, of the A. D. S. of Europe. A great treat awaits the profession from Dr. Williams, before the Odontological Society, in connection with the visit of these prominent practitioners. Dr. Williams will give a review of compositive anatomy, its application to practice, and the phenomena of the decay of enamel. (We suggest, can enamel decay if it has no structure?) This paper will bring out a discussion of all the brightest investigators. We think this notable gathering will be at the usual date of the anniversary meeting of the Odontological Society.

We spoke of Dr. Walker's visit to Nancy, the historic city of France. He met with the profession there and observed their "cliniques," which he says are in advance of ours, particularly the treatment of cases, and are conducted with all the advanced methods of antisepsis, equal to any surgical hospital. We are told that one new method is to be added to the monthly Dwinelle clinic.

This recalls the fact that we volunteered five years ago to give a series of surgical clinics before the First District Society, taking care of and following them to a finish and showing what could be demonstrated, but our offer was rejected. Demonstration settles all controversy. If there were more of it in the surgical line at our clinics there would not be so many theoretical papers lumbering up the pages of our journals.

The New York Tribune is stirring the dental nerve again upon claims of the "discoverer" of anesthesia by publishing a letter from Dr. G. Q. Colton, some statements in which are as follows: "The late Dr. Sims proved beyond question that, in 1842, Dr. Long, of

Georgia, performed one or two small operations with ether, but he made no publication of it and did not follow it up. * * December 11, 1844, I gave nitrous oxid gas to Dr. Wells, of Hartford, at his request, for he believed it would prevent the pain from extraction, and Dr. Riggs, also of Hartford, extracted a molar tooth, and Dr. Wells felt no pain whatever. This was the first tooth ever drawn without pain and was the real discovery of anesthesia. I then instructed Dr. Wells how to make the gas and he began to make and use it. Soon after he went to Boston to make the discovery known to the world, but everyone, including Dr. Morton, laughed at him. Dr. Wells, discouraged, returned to Hartford, but used the gas as an anesthetic all through 1845. * * * In September, 1846, Dr. Morton used ether and extracted a boy's tooth; then he and Dr. Jackson experimented and proved that ether would destroy pain, after which they applied for a patent, the issue of which was delayed. * * * In the latter part of 1847 Dr. Wells returned to this country (he had gone to Europe in 1845 for his health), and was astonished to learn that Dr. Morton had got a patent and claimed the honor of the discovery of anesthesia. The exciting discussion which took place between them so worked on the sensitive nature of Dr. Wells that he became deranged and committed suicide, dying on January 24, 1848. After the death of Dr. Wells Dr. Morton set up the claim that nitrous oxid was not an anesthetic and that insensibility could not be produced by it, and, therefore, he (Morton) was the discoverer of anesthesia. Dr. Jackson indorsed this statement of Dr. Morton. No one had used the gas save Dr. Wells from the time he went to Europe at the end of 1845 up to the time I revived its use in June, 1863, and demonstrated that it was an anesthetic, and the very best anesthetic for short operations. Here was a period of over seventeen years, during which time the use of this gas lay dead and forgotten. When I revived it and demonstrated that it was an anesthetic Dr. Morton had to change his ground. He could no longer deny that nitrous oxid was an anesthetic, but claimed that Dr. Wells abandoned his discovery; really admitting that Dr. Wells was the discoverer, providing the gas was an anesthetic. * * * Before he went to Europe Dr. Wells administered ether to a gentleman for the removal of a little wen from the scalp. So that in the use of ether Dr. Wells antedates Dr. Morton by two years. * * * Dr. Morton committed suicide and Dr. Jackson became deranged and was put in an asylum."

It looks as if Dr. Colton were trying to claim the whole credit because he "held the gas-bag." If anyone wants the fair-minded statement we refer him to the proceedings of the California State Dental Association for 1895, where all the facts are given. To be perfectly exact, Dr. John M. Riggs performed the first surgical operation ever made under anesthesia, and he and Dr. Wells are entitled to all the praise. There is something that the dental profession has not been wide-awake enough to claim, viz.: that to it is due the credit that a dentist made the first surgical operation ever performed under anesthesia. Don't let us be modest about this; "nothing but a dentist" has been heard long enough. In McClure's Magazine for September is an article by Dr. Morton's widow, in which she gives the whole credit for the discovery of anesthesia to her husband. She also relates the circumstances of his death, which, although very sudden, was not by suicide. Does the profession know that to the late Dr. Riggs Dr. Morton owed his defeat before congress in failing to secure the \$200,000 on his false claim as the discoverer of anesthesia?

Dr. Farrar gave a talk on "Irregularities" before the October meeting of the First District Society, which was interesting and instructive. The 17th the Jersey men will eat a dinner and view some lantern-slides on dental anatomy. "Fill a man's stomach and then talk to him," is a good motto.

The season has been opened by Dr. George Weld, of New York, who spoke of the chemical treating of root-canals and told of a favorite method devised by him, which has enlisted a good deal of interest. It consists of combining a metal and an acid, which establishes, so it is claimed, a permanent antiseptic condition. His paper was one of unusual interest, being demonstrated by chemical tests, and was attentively listened to. Several chemists took part in the discussion. He has devoted much time to his subject and it will receive much attention when published. That he does produce an antiseptic condition in the pulp-canals is demonstrated beyond question, we think. Such demonstrations prove the truth of the late Dr. Atkinson's statement: "I don't call any one a fool any more, but ask him to prove it."

Dr. Bonwill came over from Philadelphia to vindicate his claim,

not only for the whole earth, but the moon also. He claimed when Dr. Horton, of Cleveland, presented at Saratoga his claim for cataphoric effect upon sensitive dentine, that he had discovered the same thing years ago. Of course he was laughed at, but he has produced the U. S. seal as proof, and the patent issued by our government settles it. The document was handed over to Dr. S. G. Perry for inspection, and after a few minutes he arose and said Dr. Bonwill was "entitled to the moon," that the U. S. seal said so.

Cordially, NEW YORK.

EMPYEMA OF ANTRUM OF HIGHMORE.—Dr. Cobb (Boston Medical and Surgical Journal, May 7) writes that Dr. Mackenzie has suggested that the pus discharge be examined for bacilli. This has been done with no important results as regards diagnosis. The staphylococcus pyogenes aureus, albus and citreus and the pneumococcus of Telamon-Fraenkel have been tound. The latter is of interest, as pneumonia has followed antral disease.—Medical Record.

POST-ANRSTHETIC PARALYSIS.—Dr. Vautrin reported three cases of paralysis following anesthesia, seen by himself. One involved the deltoid, biceps and brachialis anticus on the right side, and gradual improvement had taken place during the six years of its existence. Another was of the deltoid and long supinator on the right; the third was facial. In the last two the paralysis soon disappeared entirely. The anesthetic used was chloroform, but the accident might follow other anesthetics. It might be peripheral or central; in the latter hemorrhagic.—Medical Record.

COCAIN IN SURGERY .- I. The use of cocain should not be abandoned because its irrational employment has produced deleterious results. 2. Always make a thorough physical examination of the patient before injecting the drug. 3. It should not be used in cases showing organic diseases of the brain, heart, lungs or kidneys, or in persons of neurotic diathesis. 4. Children bear it fully as well as adults. 5. The patient should always be placed in a recumbent position prior to its employment. 6. Constriction should be used whenever possible to limit the action of the drug to a desired area. 7. Use a freshly prepared solution for each case. 8. Distilled water should always be employed, to which phenic, salicylic or boric acid should be added. 9. A 2 per cent solution has a better effect and is safer than solutions of greater strength. 10. Never inject a larger quantity than one and one-eighth grains when no constriction is used. II. About the head, face and neck onethird of a grain should never be exceeded. 12. When constriction is possible the dose may be as large as two grains. 13. Every slight physiological effect is not necessarily to be taken as cause for alarm. 14. Cocain does have effect upon inflamed tissues. 15. In case alarming symptoms occur use amyl nitrite, strychnine, digitalis, ether or ammonia. - Codex Medicus.

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

"THE NATIONAL ASSOCIATION."

The above is the title of a four-page editorial in the *Dental Practitioner and Advertiser*, and it is a tirade against everything and everybody connected with the American Dental Association.

In it a great variety of reasons are given why the association 'is petering out'—there being too many side-shows and politicians, and 'then the association should be relieved of the hucksters and fakirs and peddlers of every gimcrack notion under the sun.' The section system is said to be a failure; the managers are incompetent and are acting for what there is in it, and what is wanted are men disassociated from trade and who are professional men first, last and all the time.

To attempt to follow all the various wanderings would not be profitable, but to discuss the question of what the association should be is well at this time. Ever since our connection with the association exhibiters have shown their specialties and wares. All these outside influences have been in connection with its meetings for certainly twenty-five years. But we quite agree with the writer in that there would probably be better work if less of the exhibit interests were present, although it is not altogether clear that they have much to do with the matter; at any rate they are not the chief cause for complaint. And as to wire-pullers and politicians, if it had not been for them how would Barrett or ourselves ever have gotten into the presidential chair? And during the time he was a candidate he made active work for "the politicians" each year until they succeeded in electing him; and now does he propose, after all the skill thus acquired, to throw them out?

We have never yet seen an association that did not have politicians who took an interest in who the managers and officers should be. But this is not the reason we are not having better meetings, nor do we think it is because the College Faculties' Association, the National Board of Examiners, and the Dental Protective Association hold their meetings in connection with the meeting of the

American, nor is it the fault of the officers, and we presume the writer alludes chiefly to the members of the executive committee. What we need is more literary work, and the literary work of any profession is not produced by rules. However, there must be some organization, either in the way of sections, or committees to represent each local society, whose duty it shall be to prepare the work or material during the year. It has always seemed to us that much of it should come from the different societies; there being about seventy of them. One thing is certain—when the literary productions are such that they arouse the interest they should, the other features which are so objectionable to our friend will be overshadowed and will be only incidental to the real purpose of the association.

If we have a correct understanding of the duty of the officers it is not the place of the executive committee, as a committee, to get up these reports, or to prepare the literary work of the association. These officers are selected to manage the business affairs of the association. So far as our experience and observation for twenty-five years go, the work as a rule has always been well done, and we challenge any man to dispute this assertion. The work of this committee is very laborious and requires a great expenditure of exertion and time, such as the critic has no conception of, and he absolutely refused upon one occasion, when asked to prepare for the local arrangements, to go from Buffalo to Niagara, or to give the matter any attention.

We quite agree that some younger men should be worked into the responsible positions of the executive committee, not because those at present in the committee are incompetent, unfaithful or dishonest, but because they have performed conscientious work and have done more than their share, and if they have had any personal gain we certainly do not know where it has been.

If ever a society were "boomed," to reply to the criticism of the editor of the *Dental Review*, it has been the American Dental Association, with circulars and postal cards each year. All the railroads were communicated with last year and labored with until an association rate was granted by every railroad in the United States. And a communication was sent to each member of the seventy societies, giving him the rate and arrangements and urging him to attend and furnish material.

It is hoped that the arduous work of getting the College Facul-

ties Association and the National Board of Examiners well organized will prove less and less, and it is certainly a very good plan to hold these meetings at the same place as the American, as it lessens the expense, saves time and makes it convenient to attend the different meetings. As to the meetings of the Protective Association, it has always seemed a fitting time for representative men of the United States to know what is being done, both as to the progress of the litigation and protection, as well as to how the money is spent. We are well aware, however, that while a large majority of the members wish this information, for some reason this association has often ruffled the extreme good temper of our friend Barrett.

We might reply with the same kind of despicable insinuations that the writer uses in his article and accuse our friend of being in the employ of an organization that is opposed to the profession banding together, and say that the article was paid for by such organization and written on that account. We make no such insinuations, however. We go farther and make the proposition that we do not believe our friend Barrett meant what he said, as we can hardly conceive of a man who prides himself on his high professional attainments and honor making such insinuations about members of his profession whose integrity and record would compare very favorably with his own. Furthermore, we believe such literature injurious, for what we should do is not to quarrel among ourselves, but let each one do his duty to himself and his fellows. And when this condition is general there will be no fault found with the American Dental Association.

Motices.

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(Continued from September DIGEST, page 548.)

Monday, August 3, 1896, 3 p. m.

President called the meeting to order.

President Abbott in the chair.

Roll called, and the following states were represented.

'Connecticut	George L. Parmele	Hartford
	Williams Donnally	
	M. F. Finley	
	H. B. Noble	
Georgia	A. G. Bouton	Savannah
Illinois	Lyndall L. Davis	Chicago
	A. W. Harlan	11
Iowa	J. T. Abbott	Manchester
Kansas	A. W. Davis	Holton
Nebraska	George S. Nason	Omaha
New Jersey	F. C. Barlow	Jersey City
	G. Carleton Brown	Elizabeth
	George E. Adams	South Orange
	Charles A. Meeker	Newark
Ohio	F. H. Lyder	Akron
Rhode Island	C. A. Brackett	Newport
Virginia	J. Hall Moore	Richmond
Wisconsin	Charles C. Chittenden	Madison

Minutes of morning session read and approved.

The Committee on the Reports of the State Boards of Examiners made their report, and suggested that the secretary the coming year send out printed blanks for the purpose of more readily arranging tabulated reports. Report accepted.

REPORT OF TABULATING COMMITTEE.

Your committee appointed for the purpose of tabulating the returns from the different state boards respectfully report that they have examined the statistics submitted by twenty-seven states and territories and the District of Columbia and we find that the total number of applications for registration has been 951; the number registered has been 780; the number rejected, 171. Of those registered, 533 were graduates.

Figured by states they are as follows:

STATE.	NO. APPLI- CANTS.	REGIS- TERED.	RE- JECTED.	GRADU- ATES.
Alabama	17	14	3	16
Arizona	4	2	2	
Arkansas (No examination)	4	4		4
Colorado	43	43		34
Connecticut	27	25	2	18
Delaware	9	9		9
District of Columbia	32	31	I	31
Florida	10	10		9
Georgia	49	43	6	42
Illinois		260	90	250
Indiana	No report.			
Iowa	115	114	I	56

Kansas	39	34	5	14	
Kentucky	50	38	12	31	
Louisiana	27	19	8	Not stated.	
Maine	II	10	1	7	
Massachusetts	145	78	67	37	
Mississippi	13	5	8	3	
Montana	7	7		5	
Nebraska	41	28	13	21	
New Hampshire	14	11	3	5	
New Jersey	32	23	9	19	
New Mexico	8	4	4	4	
New York	Report received from Sec'y at meeting.				
North Carolina	18	13	5	12	
North Dakota	4	4		3	
Ohio	139	131	8	87	
Oklahoma	2	2			
Pennsylvania	(No examinations.)				
South Carolina	II	9	2	Not stated.	
Rhode Island	16	15	. 1	7	
Virginia	19	13	6	13	
Wisconsin	61	56	5	46	
Total	951	780	171	533	

Some of the reports are for 1895 and some for 1896, but your committee has endeavored to use figures of an average year's registration as accurately as possible.

In these figures a number of states are not represented, among them being New York, Pennsylvania, Indiana and others.

Your committee have not found the reports submitted entirely clear in all points desired, and we would recommend that in future the secretary furnish to the different state boards printed blanks for their own use in making reports.

Signed, C. A. BRACKETT, H. B. NOBLE.

Dr. Adams moved a committee of two to consider the suggestions of the president in his address and report at the next session.

President appointed Drs. George E. Adams and George L. Parmele.

The application of the Nebraska state board for membership was reported on favorably and they were elected to membership.

Dr. L. Ashley Faught, chairman Committee on Colleges, read a report.

Mr. President:—A little over six weeks ago I was requested by you to accept the position of chairman of the Committee on Colleges of this association, vice Dr. William E. Magill, deceased, who was vice Dr. Louis Jack,

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resigned. In this short time all the work embodied in the report which I shall have the honor to present to you has been accomplished. New as I was to the position and to the details of the work it has been a matter of no little effort to master and to accomplish it.

At the time of my appointment I was a member of the Pennsylvania State Dental Examining Board and represented it in this body. It is proper now before reading this report that I should state that I am here with you by virtue of my right as a member of the National Association of Dental Examiners and to report as your chairman of the Committee on Colleges. It is to be distinctly understood that I am not at present a legal member of the Pennsylvania State Dental Examining Board, and do not in any sense represent that board at this meeting. I make this statement to you because of certain irregular proceedings which took place at the last annual meeting of the Pennsylvania State Dental Society, and which may possibly have attracted the attention of some of you, appearing to affect my status in this National Association of Dental Examiners. While I may not be a legal member, I am morally a member of the Pennsylvania State Dental Examining Board, and when the investigation which is now in progress is finally concluded, and its findings are a matter of record, my legal membership in the Pennsylvania State Dental Examining Board will in all probability be established. The National Association of Dental Examiners may therefore feel assured in maintaining any present existing policy touching their chairman of the Committee on Colleges, for it would be manifestly improper to anticipate the Pennsylvania State Dental Society in the investigation now in progress, for justice is to be expected at the hands of my fellow members. I have in my possession several letters setting forth the facts of the occurrence at Bellefonte, Pa., which I shall be pleased to show any individual member who may need any further assurance.

REPORT OF THE COMMITTEE ON COLLEGES.

Mr. President:—The Committee on Colleges would respectfully make the following report:

We have under consideration applications for admission upon the list of reputable schools as follows:

The University of Buffalo, Dental Department, Buffalo, New York.

The University College of Medicine, Dental Department, Richmond, Virginia.

The Birmingham Dental College, Birmingham, Alabama.

The Atlanta Dental College, Atlanta, Georgia.

The Cincinnati College of Dental Surgery, Cincinnati, Ohio.

The Cleveland University of Medicine and Surgery, Dental Department, Cleveland, Ohio.

The applications of the first five on the list have been in the hands of your committee for the required ten months and are therefore eligible for your consideration.

Each of these five is a member of the National Association of Dental Faculties.

The Birmingham Dental College,

The Cincinnati College of Dental Surgery,

The Atlanta Dental College,

have the official indorsement of the board of examiners of their respectivestates.

The University College of Medicine, Dental Department, Richmond, Virginia, has not the indorsement of its state board.

The University of Buffalo, Dental Department, Buffalo, New York, we believe has the indorsement of its state board, but as we could obtain no official evidence of the fact we cannot report it as fulfilling this requirement and leave the point for this body to determine.

The Cincinnati College of Dental Surgery,

The Birmingham Dental College,

The University College of Medicine, Dental Department,

The University of Buffalo, Dental Department,

require a preliminary examination.

The Atlanta Dental College, Atlanta, Georgia, requires only a teacher's certificate, or in lieu thereof the students to pursue what appear to us to be a grammar school course in connection with their dental studies.

The Atlanta Dental College,

The Birmingham Dental College,

The University College of Medicine, Dental Department,

The University of Buffalo, Dental Department,

The Cincinnati College of Dental Surgery,

comply with the rules regulating the number and length of courses.

The University College of Medicine. Dental Department,

The University of Buffalo, Dental Department,

The Cincinnati College of Dental Surgery,

The Birmingham Dental College,

comply with rules regarding practical instruction between courses.

The Atlanta Dental College does not.

This matter of instruction between courses is deemed by your committee to be very important, and is not accorded the prominence by the colleges in their announcements that it deserves, many not referring to it at all. Being a requirement for recognition by the National Association of Dental Examiners it is to be hoped that the colleges in the future will take notice and correct their omissions in this direction.

Your committee has thus applied your rules to the colleges individually under consideration, for the purpose only of presenting proper information to this association, it being understood by the committee, and they now call your attention to the fact, that the resolution on curriculum of colleges, passed August 5, 1895, applies only to colleges asking for recognition after the close of the sessions of 1895 of the National Association of Dental Examiners. The applications of the five colleges now under consideration were made prior to that period.

The rule requiring three professors in the teaching faculty on *dental* subjects, and five professors in the teaching faculty on *medical* subjects, has pre-

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sented such difficulties in its interpretation that we shall not try to make the application of it which was made of the other rules.

By specifically naming what the subjects shall be in both the dental and medical chairs, it does not permit of any doubling up of chairs, such as "Anatomy and Physiology," nor does it permit in our judgment general Pathology to suffice as including Dental Pathology.

Of necessity the only interpretation which your committee could make, and our interpretation is, that eight individuals at least are now required in every faculty, and that these eight shall lecture on the three dental and the five medical subjects as specified.

We believe this rule to be wise and judicious, but that to have any real value, and to accomplish the purposes of its intention, it should be made to apply to colleges on the recognized list, as well as to those seeking admission to it. We would therefore ask for that interpretation of this body on this rule regarding the scope of its application and to its meaning.

The University College of Medicine, Dental Department,

The University of Buffalo, Dental Department,

The Cincinnati College of Dental Surgery,

teach the subjects of Chemistry and Bacteriology in laboratories adapted to the purposes, but in determining the meaning of this rule we have considered the point of bacteriology satisfied when the school possessed a histological laboratory even though bacteriology was not specifically mentioned.

The Birmingham Dental College, and

The Atlanta Dental College possess chemical laboratories, but do not appear to satisfy even our wide interpretation of a bacteriological laboratory.

Atlanta Dental College,

Birmingham Dental College,

University College of Medicine, Dental Department,

University of Buffalo, Dental Department,

Cincinnati College of Dental Surgery,

have suitable lecture-rooms, dental infirmary, a general prosthetic laboratory, and room for manual training in operative dentistry.

The Birmingham Dental College,

The University College of Medicine, Dental Department,

The Cincinnati College of Dental Surgery,

The Atlanta Dental College,

have no member of faculty in their state examining board.

The clinical professor of operative technics of the University of Buffalo dental department is also a member of the examining board of the state of New York.

Our interpretation of the rule which prohibited any member of a college faculty from holding membership in a state board of examiners is, that by faculty is meant the full corps of instructors, and should include all persons connected with a college in any capacity whatever.

All of the above-stated facts have been ascertained after considerable correspondence and careful scrutiny.

The number of students in actual attendance in all of the schools of the

country for the sessions of 1895-1896, excluding those attending special courses, were 5,963. The graduates were 1,449.

The details will appear later. The comparison with previous years is as follows: 1892-1893, 2,979 students, 340 graduates; 1893-1894, 3,997 students, 911 graduates; 1894-1895, 4,979 students, 1,208 graduates; 1895-1896, 5,963 students, 1,449 graduates.

The following colleges seeking recognition as to their reputability were voted upon and passed:

Cincinnati College of Dental Surgery, Cincinnati, Ohio.

Dental Department University of Buffalo, Buffalo, N. Y.

Dental Department University College of Medicine, Richmond, Va. Atlanta Dental College was, on motion of the chairman of the

Committee on Colleges, laid over for a future session.

Recess was moved and carried until 10 a. m., Tuesday, August 4.

Hews Summary.

THE CLEVELAND UNIVERSITY of Medicine and Surgery has discontinued its dental department.

Wanted, Another Doctor.—"If I was pa an' ma," said Willie, "I'd hire another doctor. The baby we got last time wasn't finished. It hadn't a tooth or a hair."—Med. Record.

PRIZE WINNERS in the *Borolyptol* literary contest will be found on page 22 of the advertisements. There were many essays submitted and nearly all were of a high order of excellence.

AN INTERESTING CASE.—Dr. J. R. Boyd, of Waukesha, Wis., reports a curious incident which occurred in his practice. While extracting a second deciduous molar the second bicuspid was also extracted, being firmly attached to the molar by its cord or gubernaculum. There was no remedy, as the undeveloped bicuspid could not be replanted.

THE DERIVATION OF CATAPHORESIS.—Professor Morton in the Cosmos is reported to have said in his paper: "The word is derived from the Greek 'cata' to flow, and 'phoreo' downwards." Either the professor has been cruelly treated by the printer, or else his Greek has got a bit rusty. "Cata" is of course downwards, and "phoresis" is from "phorein" to carry.—Brit. Jour. Dent. Sc.

WHAT IS INDICATED BY THE TONGUE.—A white tongue, according to Dr. Ardhill, indicates febrile disturbance; a brown, moist tongue, indigestion; a brown, dry tongue, depression, blood poisoning, typhoid fever; a red, moist tongue, inflammatory fever; a red, glazed tongue, general fever, loss of digestion; a tremulous, moist and flabby tongue, feebleness, nervousness; a glazed tongue with blue appearance, tertiary syphilis.—Pop. Science News.

Just ooo a word with you.

O YOU not often wish that you had time to read all the dental journals? The Digest will gratify that wish. Its aim is to give the profession all the important news and valuable articles of dentistry in a condensed form each month. Although not yet two years old, and having had to struggle against great competition, the phenomenal success which it has scored shows that the dentists feel the need of just such a journal and appreciate the Digest. If it satisfies others, perhaps you would like it. Besides the reviews, it contains original contributions and letters each month, and will keep you in touch with all the litigation carried on by the Protective Association. Look this number over and see if it is not just the journal you want. If so, send us \$2.00 and receive the Digest from October, 1895, until January, 1898. -

If you already take the **Digest** won't you help us along by recommending it to your fellow practitioners? Also, by sending us anything which you think will interest the profession—articles, letters, curious incidents of practice, news items, etc. The columns of the **Digest** are open to a free discussion of all subjects of importance to the profession and we will be pleased to hear from all.

During the Cast Half Century

says Dr. P. H. Funston in Fopular Science News, "dentifrices have multiplied by thousands, each presenting its own peculiar claim. Some are really valuable; others are harmless; not a few are dangerous. Tooth powders, too, which sometimes accompany fluid dentifrices, must also be looked upon with suspicion, as they not infrequently contain ingredients that may prove detrimental

"A recent improvement in this



EUTHYMOL TOOTH PASTE



manufactured by Parke, Davis & Co., Detroit, Mich., and Walkerville, Ont, Euthymol tooth paste, as its name indicates, depends in large measure for its value upon cuthymol, a preparation that has long been employed by surgeons wherever perfect antisepsis was desired, and has moreover deservedly gained universal popularity because of its freedom from danger except to germ life.

"To the mind of the writer this preparation warrants specific mention, inasmuch as it offers the ideal of a dentifrice in that it is at the same time powerful antiseptic, reasonably detergent, modest in price, pleasant in odor, and exceptionally grateful to mouth and gums, while last, but not least, its use affords a positive protection against foul breath and other conditions peculiar to the mouth that lead to retraction as softening of the gums, studing of connect, formation of tartar, and decay, it is likewise a reasonably certain guarantee against a number of diseases which gain entrance to the human organism through germs in the mouth and digestive organs." [Popular Science Seese, August, 1896, page 190.]

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